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ORIGINAL LECTURES.

VERSIONS AND FLEXIONS OF THE UNIMPREGNATED UTERUS.

A Course of Lectures delivered before the Boerhaavian Society.

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LECTURE I.

ETIOLOGY.

CONFUSION, which grows more perplexing as gynecology advances, so surrounds the subject of versions and flexions of the uterus, as conditions demanding correction, that it is nearly impossible to reconcile the assertion on one hand, with the general denial on the other that defines the two schools of uterine pathology. I believe that in these lectures we will better serve the cause of sound teaching by ignoring these differences, and give to the facts—both of pathology and etiology—of the subject a careful analysis, and thus lay out a secure groundwork for the more difficult study of symptoms which will follow. In this way we shall know the relations of these lesions of form and position to what I may call the paradox of symptoms.

A glance at the various etiological groups will show that the causes range through nearly the whole field of morbid gynecological conditions. I divide these causes into five great groups:

- A. Causes existing in the uterus.
- B. Causes existing in pelvic inflammatory conditions.
- C. Causes due to non-inflammatory pelvic conditions.
- D. The condition of near parts as a cause.
- E. Systemic causes.

The first group (A) is of the first importance. To simplify its study, I divide it as follows:

- a. Developmental conditions of the uterus.
- b. Causes due to defective uterine involution.
- c. Causes existing in inflammatory and other conditions of the uterus due to parturition.
- d. Non-parturient inflammatory and other conditions existing as causes.
- e. Causes due to uterine new growths.

a. There can be no doubt that many errors in the period of uterine development tend to the production of versions and flexions of the organ. There are no reasons why these errors should not be assigned to the very earliest stages of uterine growth. But there has developed a thoughtless habit among gynecologists to apply the term "congenital" to those flexions of the uterus which evidently have their origin in early life. When we reflect that in infantile life the uterus consists of a neck with an undeveloped body and fundus attached; that there is no proper separation of the cavities of the neck and rudimentary body, but that it is one cavity with the *arbor vite* extending throughout; and that the organ continues to maintain this relative pro-

portion between the body and neck until the sixth or eighth year of life, we have good reasons for rejecting the theory of connate flexions. Dr. Hagermann, in an elaborately illustrated monograph, clearly proves the difficulty of such an origin for flexions of the uterus.

In practice, we observe a large number of flexions of the organ in young women, in which the cervix, and usually the whole uterus, are small and exceedingly mobile. To this group, C. Mayer assigns as a cause the atrophy of the uterus in childhood. This is undoubtedly the cause if we substitute for the term atrophy, the term arrested development, for we cannot conceive of atrophy in an organ not yet developed. E. Martin also takes this ground. Virchow has expressed the opinion, from appearances observed in post-mortem sections, that this group of uterine flexions, is often caused by an unequal development of the lateral ligaments of the uterus, thus tending to draw the organ forwards, and toward the shortened side. Numerous authors take the ground of congenital flexions without defining very specifically what they mean. Meissner, Boivin and Dugès, Kiwisch, Flamm, Velpeau, Sommer, Picard, West, Jobert, Cazeaux, and Tilt (Hueter) take this view. Bennet describes an anteflexion of the uterus in which there is found no morbid condition of the cervix, either as to size or position, and which he explains as "the result of the congenital exaggeration of the natural anterior curve of the uterus." Comment upon such an explanation is not necessary. The latter author explains the etiology of latero-version, when not caused by adhesions, by "congenital" causes; excepting, however, a left to right position, which is often normal. In this latter opinion Bennet has the support of Huguier. In this connection, the opinion of such a careful observer as M. Goupil demands some comment. In the examination of the bodies of twenty-five infants at the Maternité, still-born, or dead within the first fortnight, he observed nineteen cases of lateral, right or left, versions and flexions, with double lateroflexions and a retroflexion in five others, leaving only one observation in which the uterus was straight.¹ In all these cases M. Corain proved that the round and ovarian ligaments were shorter on the side of the uterine inclination than on the opposite. This difference in length between the ligaments he explains by the position of the rectum and the distention of the sigmoid flexure with meconium; thus, when right lateral version was observed, the rectum was to the left, and in the opposite displacements to the right. In two of the twenty-five cases in which sinistro-version was noticed with the rectum also to the left, the exception was explained partly by press-

¹ The following note by Bernutz and Goupil is of bibliographic interest: Aran (Archives générales de médecine, 1858, 5th séries, iif. 321) a parfaitement étudié cette disproportion des deux ligaments ronds et ovariens, dont il rapporte la première étude à Tiedemann, et qui avait été également signalée par M. Pichard. (Thèse, Paris, 1852, No. 76, p. 79), op. cit., p. 537.

ure of the sigmoid flexure and partly by the difference in the points of the emergence of the umbilical arteries, which turned the face of the uterus to the side opposite to the version.¹

There are several reasons why the observations of Goupil and Corain should be given scant inductive value; first, they prove too much. They prove that lateral flexions and versions chiefly, but all forms in the aggregate, are the rule, and the straight, or so-called normal position and form, the exception. Secondly, the uterus during the period named is not acted upon by intrapelvic forces, but is one of the abdominal viscera, and exposed to the movements and pressure of the neighboring parts; and lastly, these authors are applying to a rudimentary organ the same laws of pathology that we are accustomed to apply to the developed uterus. One word will serve to illustrate this. Inequality being the law in the development of the uterine ligaments, it becomes the rare exception to find this lack of uniformity in adult life. The same error of induction exists in the assertion of Kiwisch and Manuel, that meteorism is the cause of congenital flexions.

Confining the etiological movement to the earliest period of uterine evolution, what are the forces which tend to produce pathological varieties of position and form? This question is not difficult to answer. Broadly, all the numerous forces which tend to arrest, retard, or pervert nutrition—more specifically, the diseases of assimilation and nutrition—the diatheses. Unhygienic conditions of food, air, and exercise; all the errors of moral and social environment which tend to sexual precocity, and thus interfere with the consecutive nutrition of all the parts.

There is marked clinical confirmation of this. The feature which is rarely absent in a case of developmental version or flexion is a defect in the size of the uterus, either of the whole organ or of a part of it, and which points to the arrested, or heteroclitic, nutrition of the part; further, these cases are usually associated with incurable sterility. The foregoing render the assumption a reasonable one that this group of flexions has its origin at the period of uterine evolution and not at the foetal period.

One class of developmental flexions often met with requires a few words. In the instance of a short vagina and a uterine cervix more slender and longer than usual, the vaginal portion of the uterus takes the short anterior curve of the lower part of the vagina, or of the perineum. The result is an anteversion of the neck. Cases have been observed in which, while the vagina seemed of the usual capacity, the uterus was of diminished size, and rested permanently upon the floor of the pelvis. Martin has observed retroversion or flexions caused by defective development of the posterior wall.

b. Versions and flexions of the uterus due to defective involution.

¹ Orth reported to the Berlin Obstetrical Society (March 7, 1875) a case of anteversion so exceptional that I give it in the original. A child of two years. The broad ligaments are equal; the fundus easily elevatable. As cause of the anteversion, two abnormal folds appear in the recto-uterine excavation, which arise in the neighborhood of the internal os and coalesce by means of a broad band. They steady the cervix uteri in such a manner as to allow only the fundus to incline forwards when the bladder is emptied.—*Beiträge zur Geburtshilfe u. Gynaek.*, Bd. iv. S. 15.

In tracing the etiological conditions of versions and flexions closely in the parturient period, we must have regard to the fact that anteversion, or flexion, in a recently delivered uterus, is a normal position. Kiwisch alluded to this important fact first, and since then several observers (Hueter, Martin, Scanzoni) have explained the phenomenon. The enlarged uterus being in the cavity of the abdomen, the vertebral column defines the line of deflection of the organ; to fall backwards is not possible. If, under these circumstances, any cause should interfere with the completion of the involution process, the anteversion or flexion might be made permanent (Kiwisch). From this cause, however, retroflexion is more frequently met with than the opposite form of displacement (Martin, Hueter, Säxinger). The reason assigned is, that after delivery the round ligaments are relaxed, and no opposing force exists to the retroversion of the hypertrophied fundus. Klob has called attention to the fact that the contraction of the round ligaments can never wholly raise the organ. Martin seeks a cause of the puerperal tendency to flexions in the fact that the form of the uterus at this period is the inverse of the infantile organ; in the latter the cervix exists with the body at the minimum; in the former the fundus and body are enlarged, while the cervix remains at less than the *ante-partum* size. He states further, that for about nine days after delivery the uterus may be felt anterior to the cervix, and after that interval posterior to it (Beigel). To this arrest of the puerperal involution process, Dr. Henry Bennet attributes the increased size of the uterus in childbearing women, rather than to inflammation. Lesions of the cervix due to parturition seem to take a large share in this cause.

In this relation the effects of abortions must not be overlooked. Retroflexions especially may be so traced (Kiwisch, Arneth, Picard, Virchow, Scanzoni, Säxinger, Hueter). Injury to the connective-tissue stroma (Rokitansky), and the more lingering character of the retrograde metamorphosis (Scanzoni) after this accident, and which Beigel believes to be a prime cause of the great excess of acquired flexions among childbearing women. Among the poorer classes the same care against exertion and improper diet is not exercised after abortion as after a labor at term. The increased volume of the uterus, and the pressure of the abdominal contents in the relaxed state of the supports of the organ, cause the uterus to leave its normal position and become retroflexed. A state of previous flexion undoubtedly tends to abortion in the pregnant woman, and the two causes may become mutually intensive.

Repeated gestation has a cumulative effect upon the amount and character of the subinvolution. Meadows advanced this theory, and cites Oldham, Tilt, Bennet, West, Duncan, and others. Among 666 cases of versions and flexions observed in unimpregnated women by Martin, 395 cases had their origin in faults of evolution. Since in sterile women anteversion is the rule, and the opposite form found in about forty per cent. excess among childbearing women, it is usual to find that arrested involution is the main factor in the last-named displacement (Heywood, Smith, Bernutz, Goupil).

The tendency of injuries to the cervix during labor to retard or arrest the retrograde movement to a normal size appears to be due, first, to the impeded circulation and irritative hyperæmia arising from a contiguous

focus of inflammation; and secondly, to the extension of inflammation as a result of anatomical continuity of tissue. Owing to the peculiar character of the uterine mural circulation, retarded circulation or hyperæmia may be confined within restricted areas, hence an injury to the posterior part of the cervix might lead to an arrested involution of the posterior uterine wall, with primarily a retroversion degenerating into a retroflexion as a secondary result. Relaxation of the uterus at the puerperal period gives rise to a softened condition of the parenchyma, resulting in flexion and catarrh of the organ. From such a state Klob holds that ante- is more often produced than retroflexion, due to an excess in bulk of the posterior over the anterior wall.

Arrest of the retrograde metamorphosis of the uterus affects the fundus and body of the organ rather than the neck (Hewitt); hence the body, not having support equal to the degree of hypertrophy, bends backwards.

From the softened condition of the parenchyma of the uterus after delivery, it is reasonable to expect that many mechanical causes will operate in the production of versions and flexions. In this condition, prolonged dorsal decubitus has been known to cause retroflexion (Martin, Sommer). Leaving the bed too soon after delivery has been noted by numerous authors as a cause of flexion (Kiwisch, Rigby, Moir, Martin, Säxinger, Hodge, Meissner); also bodily exertion or muscular efforts, such as laboring women are obliged to make, have been regarded as a potent cause of flexion (Lackner, Brünninghauser). From the first cause Scanzoni states that he has found it existing in the proportion of thirty-two in seventy-two cases.

Picard has traced cases of flexion to menstruation coming on prematurely, and causing a suspension of lactation, and hence an arrest of involution. Numerous authors have mentioned the causation of flexions in mothers neglecting to nurse their children (Martin, Picard). The mammary gland when excited by nursing, has undoubtedly a most active influence in promoting contraction of the uterus in the early periods after parturition, and thus acting as a physiological factor in normal involution. Among 54 women suffering from flexions, noted by Scanzoni, there were 196 children, only 57 of whom were nursed. It is among this class of women that we should look for the action of defective nutrition, so much insisted on by Martin as a cause of imperfect involution of the uterus. This imperfect general nutrition may be due to malassimilation of food, to the action of disturbing mental causes, to a depressed vitality, the result of frequent abortions or rapid childbearing, or, as is frequently the case, to a scanty supply of proper food, from either the injudicious orders of physicians and nurses shortly after confinement, or to the poverty of the woman. Martin mentions that many of the women in whom he observed the action of these causes were excessively thin.

Martin defines several varieties of versions and flexions intimately connected with the puerperal condition, and based upon the theory of hypertrophy of limited portions of the uterine wall, the result of arrested involution within the areas of hypertrophy. The inference is not a true one, however, that this limited subinvolution is always the result of a morbid process. Dr. Hagermann, of Hanover, states that involution of the uterus after labor does not take place in all parts

of the organ with like rapidity, but takes more time at the placental site. Assuming that the rate of the retrograde changes is alike for all portions of the body of the organ, the inference is proper that the change is a longer time taking place in the thicker portions of the uterine wall, such as most observers admit to be the condition of the wall of the organ at the point of placental attachment.

Martin describes the following varieties:

1. Anteversion and flexion, in consequence of lengthening of the posterior uterine wall and defective involution of the placental site during the puerperal state and after.

From this cause there are two groups:

- a. Recent anteversions and flexions.

- β. Chronic anteversions and flexions.

Under this general head, Martin states that he has verified this etiological condition in 28 cases of living parturient women, and in 2 cases by post-mortem examination. The remote cause of this circumscribed subinvolution without regard to the situation of the placenta, is most frequently a metritis which may have had its origin during the pregnancy, at the time of the delivery, at the lying-in, or from indulging in too early sexual intercourse.

- a. Recent (acute) anteversion and flexion in consequence of delayed involution of the posterior wall of the uterus when the site of the placenta. The author analyzes 55 cases, the majority being between the eighteenth and thirty-first years of age—the most active period of the sexual life. Of these, 28 were observed in primiparæ, 10 in the second confinement, 9 in the third, 2 in the fourth, 4 in the sixth, and 1 each in the seventh and eighth labors. Seven of the cases were abortions. The range in time after delivery extends from the fourth to the forty-second day. Of these parturient women, 20 were unable to suckle their children, and 25 stated that coitus was consummated in less than six weeks after labor. A large proportion of the cases were connected with endometritis, or colpitis; a high degree of anæmia was frequently observed.

- β. Chronic anteversion or flexion in consequence of defective involution of the posterior uterine wall, when the site of the placenta.

In this group 86 cases were observed. The duration of the cases, when observed, ranges from nine weeks to twenty-one years: all counting their sickness from the last labor. Over one-third were primiparæ, and over four-fifths did not exceed the fourth confinement. More than fifty per cent. of the cases was observed between the ages of twenty and thirty years. The remote etiological relations were essentially the same as in the first group (a).

2. Retroversion or flexion of the uterus in consequence of lengthening and thickening of the anterior uterine wall when it is the placental seat.

Of this division, it is essential to their causation that the placenta have their site on the anterior wall, and not at the fundus, with part on the anterior or part on the posterior wall. Martin comes to the same conclusion with Rokitsansky, Klob, and others, that in these instances of partial restitution of the organ, the submucous connective tissue is reconstructed in a faulty manner, and thus disposes the organ to version or flexion.

a. Recent (frische) retroversion and flexion, within eight weeks after labor.

β. Chronic retroversions and flexions.

a. Of the group of recent cases Martin analyzes 49. About twenty-eight years of age is the period of greatest frequency. The time during the parturient period in which the error of form or position was discovered was in 16 in the second week, 10 in the third, the remaining cases being distributed about equally in the weekly intervals up to the eighth week. In 14 cases the last preceding birth had been either premature or an abortion.

β. Chronic retroversions and flexions of this group were observed to the number of 205 cases. Abortion occurred in the history of one-fourth of the cases. In nearly 25 per cent. the cases were primiparæ, and in 85 per cent. the number of previous births did not exceed the fourth. The largest proportion of the cases observed, 61 per cent., occurred in the decade between 25 and 35 years, showing the potent etiological conditions existing in frequent labors or abortions. The majority of the cases were connected with impaired nutrition.

3. The following causes may be regarded as remotely affecting the restitution of the uterus after delivery, or as setting up morbid processes in the organ, which tend immediately to the production of versions or flexions. Partial spasm of the uterus after delivery, or adherent placenta (Siebald). Irregular labor-pain, tetanus of the uterus (Mende). Absence of uniformity of uterine contraction; injudicious drawing on the cord; shortness of the cord (Mende, C. Mayer); or, that flexions may be caused by cramp (Bauer).

c. Causes existing in inflammatory and other conditions due to parturition.

In the child-bearing woman it is difficult to isolate inflammatory processes due to parturition from those which may arise from other causes. So important a factor in the production of uterine disease is parturition and its attendant conditions, that it deserves separate consideration. One important effect of inflammatory action has been touched upon in the arrest or retardation of the involution process (δ). There is left for us to consider those more evident inflammatory post-partum conditions.

A cause which leads to the speedy development of flexions is the relaxation of the mass of pelvic tissue due to intense inflammatory processes. Softening, as a primary result of acute inflammation, must precede all other etiological antecedents of flexions (Thudichum).

Interstitial hypertrophy and general or partial corporeal indurations must, from the nature of things, be secondary conditions. Inflammatory softening having occurred, two conditions develop flexions: pressure of the superincumbent abdominal viscera, and the gravitation of the uterus itself. It is probable that only in this state of the organ can Dr. John Williams's idea of flexion from gravitation be true. Its operation in any other condition of the uterus may be ignored. Inflammatory hypertrophy may be general, or corporeal, or cervical. In the former retroversion is the more common result; Bennet says anteversion. In hypertrophy of the cervix, anteversion of the neck usually results. Dr. Meadows says "that chronic metritis and so-called hypertrophy tend, sooner or later, to the production, first, of retroversion, and finally of retroflexion." We may, how-

ever, believe with Beigel that a direct etiological condition consists of tissue alterations at the inner os, and enlargement of the fundus and body, in which case retroflexion could be a necessary result without a preliminary retroversion. With this inflammatory tissue-softening at either the inner os or in the body of the uterus, it is not remarkable that flexions result through the strong action of the abdominal muscles, as in lifting, springing, straining, coughing, sneezing, vomiting, or in difficult defecation (Rigby, Arneth, C. Mayer, Kiwisch, Sommer, Rockwitz, Moir, Hueter). Thickening of a wall of the uterus after delivery, subsequently followed in the healing process by retraction or atrophy of the affected side may act as a cause (Boivin and Dugès, Meissner). Martin found in twenty-eight cases of flexion an inflammatory post-partum thickening of the cervix. Post-partum engorgement and hypertrophy is a most frequent cause of versions due to the increased weight of the uterus (Henry Bennet, Boivin and Dugès, Lisfranc). Excessive vomiting under these conditions has been observed as causing flexions (Conway, Edwards). The inflammation due to obstetric operations frequently terminates in flexions of the uterus. The dorsal position, long maintained after delivery, particularly when the binder is firmly applied over the lower bowels, promotes retroversion or flexion (Martin). Premature exertion on the part of the lying-in woman while the uterus is normally undergoing the restitution process, and without necessarily exciting inflammation, but as the simple result of a mechanical force acting on a softened uterus may cause or predispose to version or retroflexion.

d. Causes due to inflammatory and other conditions not parturient. Much difference of opinion exists as to the possibility of a traumatic, or, what is nearly the same thing, an acute flexion. Kiwisch was the first (Hueter) to demonstrate that the normal uterus, taken from the dead subject, could not be given a flexed form at will, since the firm tissue, the considerable thickness, and slight length of the organ, with its marked resilience, resist such a change in form. Dr. Squarey assumes that traumatic flexions are due to the rupture of uterine fibres in women previously healthy; tissue-changes occurring at the seat of the injury being due to traumatism and not antecedent changes. Dr. Bantock, commenting on this theory of Dr. Squarey, says the curvature would not occur on the side opposite to the injury, except temporarily from swelling of the ruptured fibres, but that the true flexion would be found later at the seat of the injury, from atrophy of the injured tissues. The weight of authority is against any such view. Beigel does not admit the occurrence of so-called acute flexions, except as the result of previously existing uterine disease, as shown by the presence of symptoms referable to the uterus. Scanzoni and Rokitsky believe that tissue-changes, impairing the normal resilience of tissue, and especially the theory of the latter author of the destruction of the submucous connective-tissue layer,¹ exist as a preliminary to flexions.

¹ German authority upon the theory of Rokitsky is of considerable interest. Dr. Ludwig Joseph concludes an elaborate paper, *Beiträge zur Etiologie der Uterusflexionen*, in *Beiträge zur Geburtshilfe und Gynäkologie*, Bd. ii. p. 133, in the following emphatic words of disapproval: "Rokitsky's theory of the normal structure of the uterus and the origin of flexions is untenable, since the anatomical basis on which it rests does not exist."

Hueter simply admits that with these submucous connective-tissue changes at the inner os, strong muscular effort, particularly of the abdominal muscles, may increase the angle of flexion. Hewitt admits a modified acute flexion brought on by muscular effort during menstruation, and cites a case. West and Sommer hold, with Squarey, the idea of acute primary flexions; but we may safely exclude this from among etiological conditions except such as exist as a result of tissue-changes, and which are only fully realized in the chronic form of flexions.

The catarrhal inflammation of the uterine cavity, either of the neck or body, owing to the changes induced in the mucous membrane and contiguous layers, is a constant source of versions or flexions. So commonly is this inflammation present that it is rare indeed to find a childbearing woman suffering from a version or flexion in whom evidence of endometritis is not found. We have but to recall the obliteration of the internal os, the thickening and tenderness of the walls, the hemorrhagic and tender mucous lining of the fundus as the result of a chronic corporal endometritis, in order to realize how readily these conditions drift into the necessary antecedents of versions or flexions. Papillary hypertrophy (so-called granular erosion) of the os, acting by the extension of the inflammatory process, in which it has its origin, to contiguous parts, and thus invading the cavity of the cervix, must be given causative value. When retroversion remains after the cure of erosion (Bennett), it is evidence that inflammation is yet lurking in the cavity of the cervix. The endometritic inflammatory conditions often taking place from deranged or arrested menstruation by taking cold, can also lead to those tissue-changes which result in flexions or versions. Cases of flexion which seemed to be traceable to these sudden outbursts of inflammation of the endometrium, led Martin to the idea that these flexions were often caused by rheumatism of the organ, from taking cold.

Specific inflammation must be regarded as a factor in the production of versions or flexions. It is rare to meet with a woman who has been infected with a blennorrhœa that is free from these errors of form or position. Profuse menstruation, or metrorrhagia, aside from their causative relation, may, by the ramollescence of uterine tissue, result in these displacements. For the same reasons, dysmenorrhœa, either congestive or obstructive, may, by inducing, first, softening of tissue, second, inflammatory congestion and hypertrophy, result in flexion. Injury to the cervix and to the cavity of the cervix by inflammation in near parts as a primary, and from atrophy, or cicatricial shrinking of the injured point as a secondary cause, has an important bearing. The latter cause, when acting on a point near the inner os, must almost inevitably result in flexion.

Atrophy of the uterine muscular substance, especially that form which follows puerperal involution (Klob), needs but the operation of an exciting cause to develop a flexion of the organ. This form occurring at an early period of childbearing life, may produce a serious form of the displacement. Marastic atrophy, taking place generally at a later period of life, is of less consequence in a surgical point of view, although equally potent as a cause of flexion. In aged women with a relaxation of the uterus, the pressure of the intestines upon the fun-

dus of the uterus causes an ante flexion (Klob). Rokitsky describes a peculiarly developed transverse vein in women who have borne many children, which passes through the anterior part of the cervix at about the inner os, and which, by developing its lumen at the expense of the resistance and solidity of the uterine wall at that point, permits the organ to ante flex. Klob mentions having seen these veins a line and a half in diameter. Cases of flexion have been traced to elongation of the utricular glands, and which, by growing into the submucous layer at the region of the internal os, materially weakens the organ, and thus permits the development of flexion. An exuberant production of the ovula Nabothi, and by their enlargement causing an atrophy of the uterine tissue, may tend to flex the uterus in the same way; or, by subsequently bursting, develop a loose, reticular structure, which renders it impossible for the uterus to hold its normal form (Rokitansky, Hueter, Klob).

c. Versions and flexions due to morbid uterine growths. Various morbid products developed in the uterine wall tend to produce versions or flexions. It may so act in two ways: first, by dragging the uterus toward the side of the greatest gravity—a version resulting; or, secondly, by inducing an hypertrophy of the wall involved in the direction of its long axis, and therefore inducing an approach of the fundus and cervix toward the shortest side—thus causing a flexion. The situation of the morbid growth in the uterine wall when high or toward the fundus, may retrovert or antevert the organ; when near the vaginal junction, upon the same side, it may force the uterus to the opposite side. The law seems to be: that for small fibroids—the size of a walnut—near the fundus, version occurs toward the side involved, as the result of gravity; when at the supravaginal cervix, ante flexion results toward the opposite side, from the pressure of the growths upon the near parts. Hueter expresses the law of version or flexions from this cause by a diagram in which a line intersecting the centre of gravity of the uterus, midway between the fundus and os externum, is drawn perpendicular to the horizon. Tumors situated laterally near the fundus, in either wall, ante flex the uterus, and when developed in the lower part or middle of the posterior wall, induce the opposite form of displacement. When the growth becomes large enough to impinge upon the brim of the pelvis, it acts as a displacing force, forcing the uterus in a direction opposite to its seat of development. Kiwisch has observed lateral flexions or torsions from the presence of uterine fibroids following a somewhat similar law of displacement. Intrauterine polypi, when of small size, produce, oftentimes, a retroversion similar to that caused physiologically by a pregnancy under the third month. When these growths are pedicular within the cervical cavity, anteversion or flexion is generally the result. When of sufficient size to force the fundus uteri above the brim of the small pelvis, versions or flexions backwards, caused by the earlier stages of growth, disappear, and the uterus becomes anteverted or ante flexed (Boivin and Dugès, Kiwisch, Velpeau, Sommer, C. Mayer, Rockwitz, Scanzoni, Hodge Sims, Säxinger, Hueter, Gusserow).

b. Causes existing in pelvic inflammatory conditions.

a. Versions and flexions due to adhesions of the uterus to near parts.

b. Versions and flexions caused by inflammatory exudations.

c. Versions and flexions caused by cicatrization of pelvic tissue.

a. It is not a thoroughly settled point in etiology, whether, when adhesions are found coexistent with flexions of the uterus, the flexion of the organ was not a condition prior to the adhesions. Tilt and Scanzoni both concur in the belief that adhesions are often the result of prolonged misplacement. The displacement and the adhesions may, however, be the co-result of a common factor, and the two conditions mutually prolong the existence of each (Bennet, John Williams). A common form of flexion from adhesion is that in which the vaginal portion has contracted adhesion with the vagina—generally that of the posterior periphery of the cervix to the posterior vaginal wall (Rockwitz, Velpeau). Sommer states that adhesions of this character are often the result of ulcerative processes of the uterine neck. In this situation one might readily confound the cicatricial contraction of old ulcers with simple adhesions. In this manner adhesion of the cervix may cause flexion, the body remaining unchanged in form, just as the body may become flexed while the cervix retains its normal form and position (Hueter).

According to Virchow, flexions are caused by adhesions of the uterus when the organ has not the necessary movement in the antero-posterior direction. Anteflexion is produced when the fundus uteri is so fixed that in the expansion of the bladder it cannot be moved backwards. The fundus then lies close upon the posterior wall of the bladder, and as the cervix is fixed, it follows that the thinnest point on the uterine body—that where the body and cervix unite—is the seat of flexion. That flexions are for the most part the result of partial inflammations of the peritoneum, in which the exudation is organized into connective tissue which causes firm adhesions, and which, later, causes the flexion by contraction. The ligaments of the uterus may also participate in both the inflammatory action and the subsequent contraction. Hueter makes a proper comment upon this: It cannot, indeed, be denied that a local peritonitis can develop after a flexion has been a long time in existence. Velpeau, C. Mayer, Rockwitz, DePaul, Arneth, Picard, West, Manuel, Säxinger, and Hueter, speak of peritonitis with adhesions developing after a flexion has formed. According to Kiwisch, it is especially the exudations which lie to one side of the uterus that cause the lateral flexions. In these cases Martin has noticed the connection of anteflexion with lateral version.

Martin has observed an extremely rare form of retroversion and flexion caused by shrinking of the lig. pubovesico-uterina, the result of inflammatory exudate, or from cicatricial contraction of the anterior vaginal vault. It may be observed to begin with an approach of the whole organ to the anterior wall of the pelvis (ante-position uteri). The lower anterior uterine segment is drawn forwards and fixed. Posterior to the neck the uterine body may be felt, in old-standing cases, forming a sharp angle with the vaginal portion. Of the 28 cases observed by Martin, 22 were married, of which 19 were sterile. The accident appears to be one belonging to early adult life, 19 of the cases coming under observation previous to the thirtieth year. Another variety of

this form of uterine displacement is caused by traction of a ligamentum ovarii and fixation due to a small ovarian formation. In this form the uterine body forms an angle with the cervix, backwards and laterally to the side on which the diseased ovary lies. This state of affairs exists only when the ovarian cyst is small. When the tumor increases in size the uterus becomes detached from its surface. In this class the uterine body may be either retroverted or retroflexed.

A rare form of anteversion and flexion has been traced by Martin, to contraction of one or both round ligaments, and by adhesive exudation upon the anterior peritoneal surface of the uterus. The body of the organ can be felt behind the os pubis with more or less absolute fixation. The flexion is generally at an obtuse angle, and when due to the shrinkage of one lig. rotunda is placed obliquely. Thirty cases were observed. Masturbation was noticed as a remote cause. The shrinkage involving the ligaments is usually due to exudative inflammatory processes in the peritoneal covering. Abegg has verified, by a post-mortem, that a state of complete anteversion was dependent on old adhesions anteriorly, and also between the posterior uterine surface and the small intestines, the lumen of which was much narrowed.¹

Anteversion and flexion due to shrinkage of the sacro-uterine ligaments, or to inflammatory plastic exudation upon the peritoneal covering of these parts, is a comparatively common etiological condition.

Martin observed 37 cases of anteflexion, and 18 cases of retropositio uteri from this cause in a total of 217 cases. From fixation of the lower uterine segment to the posterior pelvic wall, the organ is often in a state of retroposition, the corpus and cervix uteri both being flexed forwards. This condition is usually found early in the morbid process. Later, from the action of the rectal contents, retroposition disappears, and anteflexion is the prominent feature. Martin's pathological investigations throw considerable light on this condition. The exudation of pseudo-membrane with spots of discoloration was found upon the posterior wall of the uterine neck, and upon the peritoneal covering of the hollow of the sacrum. Schultze observed 71 cases in a total of 250. Of this number, 22 were virgins, 37 had borne children with many abortions. Schultze lays stress upon mechanical causes, as in too violent coitus, coitus with a proportionately too long penis, drawing of the Douglas folds in great efforts at defecation, instrumental deliveries. Martin regards septic poisoning, taking cold during or near the menstrual period, bathing—especially sea-bathing—as common causes of perimetritis posterior. Gonorrhoeal infection is a common cause (Martin, Duncan, Bernutz). Freund has described a chronic atrophic posterior perimetritis in which inflammatory hyperplasia of the connective tissue naturally leads to shrinking of Douglas folds by absorption of the exudate. P. Müller dissents from the conclusions of Schultze—that the condition of perimetritis posterior as a cause of flexion in multiparæ is not a frequent con-

¹ Aran says: Dans l'anteflexion les lig. suspubiens sont tendus, résistants et surtout très-courts. Dans la latéroflexion, le lig. suspubiens correspondant au sous de la flexion est constamment raccourci tandis que celui du côté opposé est tendu et allongé. (Leçons clinique, Maladies de l'utérus, p. 389.)

dition; that when shortening of the lig. sacro-uterina does occur, it is probably an additional complication, and that functional arrest of the sexual organs is due to the flexion and not to the complication.

b. Versions and flexions caused by inflammatory exudations (phlegmons). In this group, the error of position is due to the displacing force exerted by the inflammatory mass thrown out in the intrapelvic cellular tissue. Antelexion with a lateral inclination is a common form of deviation of the uterus from this cause, as the Douglas pouch, or its lateral margins, is obnoxious to pelvic phlegmon or abscess. The largest of these inflammatory exudations, from often having their seat intraperitoneal, instead of intracellular, induce displacements of the uterus, the extent of which is only limited by the opposite pelvic wall. Usually, ante- or retro-position uteri is due to a traction-force in the direction of the displacement; but, in this etiological group, these errors of position are caused by a displacing force pushing from behind. This displacement of the whole organ gradually disappears on the evacuation of the abscess or resorption of the phlegmon; and version or flexion occurs from the persistence of adhesions, or shrinkage in the wall of the abscess. While adhesions and fixation are marked features in the uterine displacement, yet the adhesions in the early stage take no part in the displacement, that, seemingly, being dependent upon the crowding of the inflammatory mass. The extent to which the uterus is sometimes distorted from its natural form and position by this cause is remarkable. Duncan mentions cases in which a hard tumor was felt in the iliac fossa—an extension, apparently, of the phlegmonous mass—but which, on an examination by the sound, proved to be the uterus, which had been driven out of the small pelvis by the exudation, and carried to one side by adhesions. Bernutz has described cases of periuterine lateral phlegmons involving the lower uterine segment, in which the cervix, instead of being pushed away, is drawn into the affected cul-de-sac. In other cases recorded by this author, latero-versions, which were the most frequent of all the displacements, were observed connected with torsion of the uterus on its axis as the margin of the tumor was advanced.

c. Versions and flexions caused by cicatrization of pelvic tissue. This is a group of uterine deviations valuable only in its etiological relations. These are caused mainly by (1) the contraction of abscesses in suppurative parametritis, by (2) fistulous openings into the bladder or rectum, and by (3) contractions following the too free use of caustic applications to the vaginal vault or intravaginal cervix.

The contraction of pelvic connective tissue involved in severe cases of parametritis is sometimes extensive, but usually not to the extent of arresting the function of the uterus. The lateral margins of the recto-vaginal sac being common seats of these abscesses, lateral versions and torsions are very common results. When developed in the vesico-uterine cellular connections within the common peritoneal covering of the two organs, and finding spontaneous exit for the contents of the abscess through the bladder, subsequent contraction of the sac may develop a strong and nearly immovable anteversion. When the abscess escapes through the anterior vaginal wall, subsequent contraction of the fistulous track and opening may cause an approach of

the whole uterus toward the pubes, when the entire vesico-uterine connection is involved. Cases may occur in which, while the fundus is movable, the cervix is drawn forwards by contraction of the anterior vaginal wall forcing the uterine fundus into the hollow of the sacrum. A retraction of the cervix from cicatricial contraction of the posterior vaginal cul-de-sac, may result from the persistent, free, or bungling use of caustics. In the days of free cautery, now happily past, it was not unusual to find the posterior cul-de-sac obliterated, and the posterior labium reduced to a trace, while the fundus was thrown forwards in a nearly incurable antelexion. There seems to be no reason why the posterior cul-de-sac and uterine lip should be the seat of this destructive cautery except that from the position of the patient upon her back these parts more directly confront the operator.

Vesico- and recto-vaginal fistulae, with the more or less extensive slough attending these accidents, cause an almost endless variety of versions, flexions, and torsions. Sloughing at the base of the bladder quite generally causes retroversion. Cases are noted in which the uterine cervix becomes incarcerated in the contraction following an extensive slough, the organ becoming almost inverted and the uterine cavity opening into the bladder. The author has closed fistulae so complicated, in which the subsequent menstrual fluid escaped through the urethra. The numerous cases recorded by Emmet and Hayes Agnew quite generally involve distortion of the uterine position or form.

c. Causes due to non-inflammatory pelvic conditions.

a. Versions and flexions due to pelvic and other malformations.

b. Versions and flexions caused by pelvic tumors, extrauterine pregnancy, and periuterine hematocoele.

a. Versions and flexions due to pelvic and other malformations. Stolz mentions having found lateral flexions in rachitic deformity of the pelvis. Boivin and Dugès mention as favoring conditions an increased curve of the sacrum backwards and an undue prominence of the sacro-vertebral angle. Excessive capaciousness of the pelvis tends to expose the uterus to the action of exciting causes (Hensley). Strong inclinations of the pelvis favor the development of antelexions, and a capacious pelvis and slighter inclinations dispose to retroflexion (Holst). A narrow and incomplete development of the pelvis—resembling, in many respects, that of the male—observed in cases of menischesis, is often found connected with flexions of developmental origin, with which, however, it seems to hold no etiological relations, but both are co-results of common factors.

Changes in the lumbar curve induce changes in the direction of the long axis of the uterus relatively to its neighboring parts. Aveling gives the normal pelvic angle at 54° , but as the curve of the lumbar vertebrae lessens, the pelvic angle becomes debased. In the last condition the abdominal viscera, instead of being supported by the lower margins of the abdominal walls with a solid base over the os pubis, gravitate within the cavity of the pelvis and force the uterus downwards in a prolapsus, or forwards, or backwards. All exercise upon the feet exposes the pelvic viscera to a series of succussions, that intensify the action of the original cause. The lumbar curve was observed in a number of cases of

versions and flexions, by taking an impression of the back on a strip of sheet lead, and record made of the curve by drawing the outline of the lead, after being carefully removed, upon a sheet of paper. In nearly every case the deep arch normally observed at this portion of the spine was found to be more or less impaired. In the majority of these cases the general health was seriously involved, and the debased curve was explained by the weakening of all the muscular supports of the bony framework of the body. Aveling explains prolapsus of the uterus by this alteration of the pelvic angle, but when we conceive that this angle may, from this cause, be reduced to 27° or 25° , it is evident that prolapsus cannot be a more frequent result than versions or flexions. Figs 6 and 7 give a good idea of the mechanical effect of this alteration in the curvature of the lumbar vertebrae.

b. Versions and flexions caused by (1) pelvic tumors, (2) extrauterine pregnancy, and (3) periuterine hematocoele. In this group versions and flexions are due to displacing forces. The list might be extended to several other conditions which are rarely noticed, such as exostosis within the pelvic cavity, and displacing forces having their origin in the abdomen. Pelvic tumors, other than uterine, hold etiological relations to versions and flexions principally when of small size. New developments in the ovaries, broad ligaments, and tubes have been noticed by Rockwitz as frequent causes. Head has found retroflexion connected with small ovarian enlargements. When ovarian cysts attain considerable size, if the uterus preserves close adhesions to the tumor, the organ is generally distorted in the direction of the growth of the cyst. When growths of this nature have invaded the abdominal cavity and the uterus has become detached from its wall, the organ may become flexed by the downward pressure of the abdominal contents; the direction of the flexion depending very much upon the form of the displacement existing at an earlier stage in the growth of the tumor. Ascites may produce flexions in the same manner, and which, theoretically, in case of impaired lumbar curve, should be anteversion or version, and in cases in which the pelvis preserves its normal angle retroflexion should be the result. To the same class of displacing force meteorism belongs, which is mentioned by Kiwisch and Manuel as a cause of flexions. Parry has observed that extrauterine pregnancy most commonly produces an antero-lateral version with elevation of the uterus; at other times, when the vicarious uterus is developed anterior to the proper organ, retroversion has been observed.

Pelvic hematocoele, like the periuterine phlegmon or pelvic abscess, may produce version by displacement. From the action of this cause the displacing force acts uncomplicated by adhesions, since these are accidental, not necessary, attendants. Adhesions may develop subsequent to the primary cause, and make the uterine displacement permanent, or shrinkage of the pelvic cellular tissue following the resorption or evacuation of the extravasated blood may lead to flexion by traction.

D. Causes due to the condition of contiguous parts.

a. Versions and flexions caused by the action of the rectum.

b. Versions and flexions caused by the action of the bladder.

c. The perineum, the vagina, and the uterine ligaments in their effect on the form and position of the uterus.

a. That versions or flexions may be caused by the action of the rectum and the various sets of muscles involved in the act of defecation there can be no doubt. Dr. John Williams has carefully studied this subject. Throwing out his theory concerning any normal relation of the fundus of the uterus to a line continuous with the anterior surface of the spinal column, with which he has needlessly complicated the subject, he is undoubtedly correct. In the act of defecation the bladder is first emptied; secondly, the rectum. By the completion of urination, both the uterine fundus and the bladder sink lower in the pelvis. In case of constipation, so common among women, straining is then made and the fundus forced still lower, and, having reached the maximum of descent, becomes fixed. The cervix in this condition is pointed nearly horizontally backwards, and being now the most movable part of the uterus, bends upon either itself or the uterine body. This process, by frequent repetition, may become the cause of permanent anteversion. In case the uterus is in a state of slight retroversion from vesical distention, the straining effort then forces the fundus into complete retroversion, and the lowest point of descent is reached. At this stage the fundus becomes the fixed point of the uterus, the uterine body being also held by the posterior vaginal wall, while further straining effort forces down the cervix. Thus retroflexion results. The anterior vaginal wall may also take part in this process, when, by the fundus being forced deeply into the Douglas pouch, it is placed upon the stretch, and prevents further upward movement by the cervix.

Simple rectal distention from the accumulation of fecal matter, has been known to cause anteversion. Bedford records such a case. Gustav Carus refers an anteversion to the accumulation of feces in the sigmoid flexure of the colon and upper part of the rectum. Rectal distention united with the violent muscular efforts to expel the contents of the rectum, combine two of the factors of anteversion or flexion (Boivin and Dugès, Scanzoni).

b. The action of the bladder in causing versions and flexions may be regarded as a minor factor. Boivin and Dugès report a case in which distention of the bladder caused a retroversion, and regard this as a frequent cause of retroversion of the pregnant organ. After delivery, distention of the bladder may act as an exciting cause of retroversion (Protheroe Smith, Denman). Baker Browne cites Sir Charles Locock as reporting a case in which excessive distention of the bladder caused a retroversion in a young, newly married woman. Hewitt credits the bladder with more power to induce retroversion than the rectum has to cause the opposite form of displacement. The bladder, from its position, offers a certain amount of antagonism to a forward displacement of the uterus due to rectal distention.

c. The perineum, the vagina, and the uterine ligaments, may take a subordinate part in the etiology of versions and flexions. Tyler Smith believed that rupture, or impairment of the perineum was a frequent cause of retroflexion. If we regard the vagina as part of the machinery of uterine support, there is no doubt of the truth of this. As is already mentioned, the perineum,

in case of a very short vagina, often takes part in the production of developmental flexions of the cervix uteri. In very extensive lacerations of the perineum, prolapsus, when not complete, must always be associated with retroflexion, or version, which gradually disappears in the erect uterus as the prolapsus reaches the third degree.

Dr. Williams has mentioned cases of retroversion due to elongation of the anterior vaginal wall. Sims also alludes to this cause. In the earlier stages of cystocele, anteversion results from the removal of the usual support of the vesico-uterine connection; but as the vaginal prolapse continues and the uterus also begins its descent, the anteversion disappears. The fundus, before the third degree of prolapsus is reached, may even occupy the cavity of the sacrum. Rectocele and prolapsus vaginæ are of doubtful etiological relation to the subject. Prolapsus of the uterus so quickly develops either primary or secondary in its relations to the vaginal vault, that any other form of uterine displacement is lost sight of.

Boivin and Dugès report a case in which anteversion was caused by an inflammatory congestion of the suprapubic ligaments, occurring at each menstrual period. The inflammation began in the left labium, and the thickened ligament could be traced to the inguinal ring. The same authors regard the utero-sacral and the suprapubic (round ligaments), while being shortened, as the result of long-standing displacement, yet this may ultimately exist with the force of a cause, and render the displacement incurable.

Klob, while giving the round ligaments but little value as a means of support of the uterine fundus, believes that they may render an extreme degree of retroflexion difficult of reposition by fixing the fundus. In this instance the line of traction of the ligaments falls below the junction of the uterine body with the uterine neck, and thus tends to double the uterus upon itself when in the third degree of retroflexion. It is evident from the experiments of Savage, on the structures supporting the uterus, that no slight degree of contraction of the round ligaments would tend to develop version or flexion of the uterus forwards.

E. General and special causes.

a. Flexions and versions caused by posture, incidental to occupation.

b. Excessive sexual indulgence and masturbation as causes of versions.

c. Impaired nutrition and other causes of a general nature, of flexions and versions.

a. The effect of posture, and especially such as is incidental to occupation, may have a marked influence upon the tendency to version or flexion of the uterus. The relation of long-maintained dorsal position to the causation of retroversion in the newly delivered woman has been already alluded to. Many of the modern industries which so largely employ women, are, without doubt, active causes of uterine malposition. This cause is also found to be combined with errors of diet, deficient food, and bad ventilation. The use of the sewing machine is regarded as a frequent cause of versions and flexions (Hewitt, Squarey). Occupations that require long standing upon the feet, such as saleswomen and mill operatives, favor the development of flexions.

b. Overindulgence in sexual intercourse is alluded to

by many authors as a cause of flexions. Bennet believes that it may cause a retroflexion of the cervix, and especially if the cervix is rigid from inflammation, and the body of the organ yields to the leverage. In such a condition the cervix is thrust back in ante-, and forwards in retroversion. Routh has expressed the opinion that the uterine congestion that attends orgasm may, by too frequent repetition, become permanent, and thus lead to retroversion. While nothing can be objected to the theory involved in this, yet the examination of prostitutes fails to show that versions and flexions are more frequently met with in this class than in married women. An examination of a large number of the female members of the Oneida Community shows that these women, as a class, are remarkably free from versions and flexions.

Masturbation is frequently alluded to by German authors as a cause of uterine flexions. Martin cites this as a cause of antelexion from shortening of the round ligaments and adhesive inflammation of their covering. Such cases of masturbation as the author has seen were attended with either versions or flexions, but nutrition was greatly impaired, and extreme nervous depression present, which may have been the more active causes of the uterine displacement.

c. Impaired nutrition, a state of the general health, called general debility and want of tone, from any cause, are regarded by Hewitt as important predisposing causes of versions or flexions. The impaired vital resistance and general arrest of nutrition that attend excessive lactation and rapid childbearing, are often found associated with flexions of the uterus in very evident etiological relations. Emmet states that mental disquietude, ill-assorted marriages, and the various means used to prevent conception are causes of flexions. Diseases of remote organs, especially such as involve the circulation, have been believed to have a bearing upon the causation of changes in uterine form and position. Sommer states that diseases of the heart, attended with obstructed circulation, cause these changes by producing relaxation of the uterine parenchyma. Wright traces such results to retarded portal circulation, which leads to a venous stasis of the uterine tissue.

From the foregoing review of the etiology of versions and flexions, it is evident that the question how these changes—one of form and the other of position of the uterus—may be brought about by nearly identical local conditions, is one of considerable interest. But that these different results of common etiological factors are not mutually interchangeable, the following figures prove beyond doubt. Ten German observers place the proportion of antelexions at 65 per cent., and of retroflexions at 34 per cent. Emmet, who has had excellent opportunities for observation, makes the difference still greater, being 58 per cent. of the former to .17 of the latter. An examination of the statistics of many writers gives the ratio of retroversions to anteversions as three of the former to one of the latter. Now, while a common cause may in one instance produce either a backward or forward displacement of the uterus, the above figures clearly show that these are not chance results, but are produced by governing causes. Emmet's idea—that a retroflexion is a deviation from a previously existing retroversion—is one that is found running through the writings of various authors, and, to a certain

extent, is probably correct. As a preliminary to version, the uterus must possess a normal condition of stiffness and resistance (Squarey). This retards the development of flexion. It is an established pathological fact that changes in the structure of the uterus are indispensable to the existence of flexions (except such as may be caused by parametritis and displacing forces), either in the sub-mucous connective tissue (Rokitansky), or through the parenchyma of the organ (Sommer). These changes may be the direct precedent of the flexion as the result of antecedent pathological conditions, or may supervene upon a previous state of version. The only instance in which a causative condition seems to produce either a version backwards or forwards is in the abnormally movable uterus of Savage. Here, what is anteversion at one visit may be retroversion at the next—most probably due to the direction in which the superincumbent intestines exert their pressure upon the uterus. Bernutz and Goupil have met with similar cases. Squarey tries to show that the uterus is always at right angles to whatever pelvic plane the organ may chance to be situated. Consequently, when the uterus is well up in the pelvic cavity, it is directed forwards; and when low, the fundus inclines backwards. When, therefore, the organ holds the former relation to the pelvis, the operation of a displacing cause produces anteversion, and the same cause operating in the latter relation produces retroflexion.

ORIGINAL ARTICLES.

URÆMIC AMAUROSIS.¹

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If we refer to text-books on ophthalmology, we find that uræmic amaurosis has received but a passing notice. We must ascribe this to the fact that the oculist but seldom has to deal with this disease; for, while it is, on the whole, of rather infrequent occurrence, it remains almost exclusively under the observation of the general practitioner. Consulting works on general medicine, we will, however, be still more unfortunate in seeking a nearer acquaintance with the separate features of the disease, for it generally forms but one of the group of symptoms which threaten such danger to life, that when the patient recovers, they are but remembered as the terrors of the storm that has passed.

While it has long been recognized that transient loss of vision is occasionally observed among the other symptoms of uræmic intoxication, pathology still owes us a satisfactory explanation as to exactly how the eye becomes involved. It cannot be ascribed to the intensity of the intoxication, for examples are not wanting, in which the uræmic symptoms have gradually developed from the headache to convulsions and coma, sight having remained intact, while there are others in which the amaurosis appeared as the only prominent symptom, as is well illustrated by one of the cases to which I shall refer in this paper. But it is not only with regard to the uræmic amaurosis

that this obscurity exists; we find it equally difficult to explain the absence of all uræmic symptoms in many cases of kidney disease, in which the urinary analysis and the very pronounced dropsy testify to the existence of grave lesions; while, on the other hand, we are sometimes suddenly confronted with very threatening uræmic manifestations, when the urine may show but a trace of albumen. Again, it is not altogether infrequent that a patient learns that he has Bright's disease after an ophthalmoscopic examination has been made, when before there was nothing to apprise him that he was the subject of so grave an affection; and still the cases greatly preponderate in which, even among the most exaggerated general symptoms, the retinal degeneration just alluded to does not appear. As another example of the great variability in the symptoms of kidney disease, I may allude to the many cases which run their whole course to the lethal end in which dropsy has not been observed. When we contemplate the many irregularities in all the other symptoms of kidney affections, we shall not wonder so much in finding the amaurosis in the one case, and absent in the many in which the symptoms of uræmia are equally or even more outspoken.

The uniform absence of ophthalmoscopic changes would permit us to ascribe the loss of vision in pure uræmic amaurosis to either the presence of poisonous material in the cerebral circulation, and to an effusion into the brain substance or in its ventricles equally well. Retinal alterations in cases of uræmia, with complete loss of vision, are to be regarded as preëxisting, the amaurosis being an additional complication. Cases of nephritic retinitis are occasionally met with, in which there is a sudden and complete amaurosis, accompanied by other uræmic symptoms. There will be no difficulty here to recognize that the intensified eye trouble is due to the uræmia, but it may not always be so readily attributed to this cause when the previously impaired vision has suddenly been changed to complete loss of sight, if the other uræmic symptoms are altogether absent, or present only in a subdued form. In connection with this class of cases particularly, it is always well to bear in mind that, in simple nephritic retinitis, complete blindness is not reached, and therefore, when absolute blindness supervenes, we are generally safe in charging uræmia with the damage done.

Before presenting my cases, I will describe the general characters of uræmic amaurosis. This anomaly of vision, like all other signs of uræmia, is characterized by the suddenness of its invasion, the loss of vision from the first, or in a very short time, being complete. The ophthalmoscopic examination will yield entirely negative results, except in those cases in which retinal degeneration preëxisted. There is no especial form of kidney disease to which the amaurosis is restricted; it occurs in all forms, although, perhaps, more frequently in those met with in pregnancy and scarlet fever. In some cases in which the uræmic symptoms appear at once in these fulminating forms, the patient having been seized with convulsions without any previous warning, and lapsing in a state of coma may awake from this condition and find his sight gone. At other times head-

¹ Read before the Baltimore Medical Association, 1884.

ache and vomiting alone may precede the amaurosis, which may be subsequently followed by convulsions and coma; on the other hand, in the cases just described, the amaurosis may be the highest point in the intensity of the case, from which the symptoms may recede. As the uræmic explosions may repeat themselves a number of times in the same case, so also may several attacks of amaurosis be observed in one patient.

During these attacks the urine is generally scanty or entirely suppressed, the chemical analysis showing almost always large quantities of albumen. Ebert¹ has called attention to the fact that sometimes the urine, which before had been loaded with albumen, was entirely free of it or showed but traces during the attack, and again revealed it as one of its constituents in appreciable quantities, when it had passed over.

I recently had the opportunity to make a similar observation in the case of a child, who was convalescing from an attack of scarlet fever, when violent headache, persistent vomiting, and cedema of the eyelids presented themselves, during which time the urine showed but a trace of albumen, which, however, greatly increased for a short time when these symptoms had subsided.

The state of the pupils in uræmic amaurosis differs very much according to the accounts of the various observers. Sometimes they are found perfectly normal, or, being somewhat dilated, promptly react to the stimulus of light. At other times they are widely dilated and refuse absolutely to respond to light. It is generally considered that the cases in which the activity of the pupils is maintained, offer the more favorable prognosis as regards the restoration of sight after the patient has recovered from the attack, although even in those cases in which the dilated pupils remained totally unaffected by light, complete return of vision has been observed.

The prognosis upon the whole when the patient does not succumb to the general effect of the poison is to be regarded as favorable. Sight may be re-established as suddenly as it had disappeared; it may also come back gradually, and, indeed, several days may elapse before full vision is regained. In some cases in which there were several attacks at short intervals, while the patient was relieved of the complete blindness, with which he had been afflicted, still vision remained permanently somewhat impaired. Simpson² has reported a case of a lady who had been the subject of an uræmic attack, in her fifth confinement, associated with amaurosis, of which she recovered with perfect sight; and who had a similar misfortune after the birth of her sixth child, but on this occasion sight was but partially restored. In cases of uræmic amaurosis at or after labor, complicated with hemorrhage, part of the damage to vision may be due to the loss of blood, and this may hold equally true to any permanent injury that may remain. I am in this connection reminded of a case, which came under my observation, in which a lady became blind suddenly from hemorrhage on the eighth day

after her first labor, having had a severe post-partum hemorrhage immediately after the birth of her child. She gradually recovered sight, but one eye remained considerably impaired.

With regard to the frequency with which amaurosis occurs in uræmic attacks, no statistics have, as yet, been furnished. The cases are upon the whole rather rare, and this induced me to communicate the two following cases, which have come under my observation:

CASE I.—Mr. D., æt. nineteen years. Dr. David Street was called to see the patient on November 21, 1883, and found him suffering from bronchitis, for which expectorants were ordered. November 22d he was much relieved, and he continued to improve till November 25th, when he complained of pains and soreness all over the body, which the doctor regarded as of rheumatic character, most marked in the muscles of the arms. For this condition acid. salicyl. gr. vijss, every three hours, was prescribed. In the afternoon of the same day (5 P.M.) total blindness suddenly ensued. November 26th he was still totally blind, and suffered from frontal headache—had taken altogether thirty-five grains of salicylic acid.¹ At 2 P.M., I was requested to see the patient in consultation. Suspecting uræmia, from the suddenness of the loss of vision, I examined the patient with that in view, and found cedema of the eyelids, slight pitting of the lower extremities, and Dr. Street subsequently found the urine loaded with albumen. Ordered one drachm of the fluid extract of jaborandi, every three hours, and wet cups in the lumbar region. The bitartrate of potash was also given in purgative doses. November 27: Sight much improved; perspiring freely; treatment continued. November 28: Sight perfect; patient feeling better; jaborandi continued in smaller doses. I did not see the patient after this time, but from notes kindly furnished me by Dr. Street I am enabled to state that, so far as sight is concerned, as well as the general condition of the patient, the improvement remained permanent, although albumen still appeared in the urine and the microscope revealed epithelial casts and red blood-corpuscles. December 5: Patient well enough to go out, feeling perfectly well, the urine, however, containing a large quantity of albumen. After this date the case passed from the observation of Dr. Street.

This case presents the interest of illustrating how through the amaurosis alone attention was drawn to the true nature of the constitutional disturbance. It is true that cedema of the eyelids, and a similar condition of the lower extremities, were also present, but it is not surprising that they had been overlooked, for it is the common experience that these conditions are only discovered when they are looked for to explain some more important symptom.

CASE II.—Mrs. C. R., æt. forty years, having passed seven months of her tenth pregnancy applied for advice, September 2, 1883, in regard to a general feeling of discomfort, which had been developing during the previous few days. She complained especially about a feeling of tightness in the waist

¹ Transitorische Erblindung bei Typhus und Scharlachfieber. Berliner klin. Wochenschrift, vol. 2, 1868.

² Edinburgh Month. Journ. of Med. Sciences, Oct. 1852, p. 369.

¹ I have mentioned the quantity of acid taken, since Epstein has shown that the prolonged use of large doses of salicylate of soda produces albuminuria.

and abdomen. At this time her facial expression indicated kidney trouble, and her extremities were oedematous. September 3: The urine sent to me early this morning proved to be loaded with albumen. On this day, at my first visit she felt somewhat better, but during the afternoon a violent headache set in, which became greatly aggravated during the night, and from which she suffered uninterruptedly till morning, when it gradually yielded to large doses of morphia. September 5, at about 4 o'clock P.M., her headache having been greatly relieved, she noticed a dimness of vision, which within an hour culminated in total blindness. I saw her about 6 P.M., when she was suffering from great mental depression, which was probably somewhat attributable to her having been previously anxious about her vision, her mother having lost her sight, and she herself having been considerably annoyed by an irregular astigmatism. At this juncture, I apprised the husband of the great danger that was threatening, and presented the expediency of a premature labor, should convulsions set in. At midnight I was summoned and found Dr. McKnew in attendance, he having ordered chloral and some bromide for the convulsions, which just before had assailed the patient, but had passed off when I arrived. Prof. Thomas Opie was now sent for and just after he arrived another convulsion occurred, for which chloroform was administered; while the patient was under the influence of the anæsthetic it was decided that premature labor should be induced. This part of the case was most skilfully conducted by Prof. Opie by means of a Molesworth's dilator, and delivering by the feet. The operation certainly did not occupy more than half an hour. There was no return of the convulsions, and the patient made a very speedy recovery. Sight returned very gradually, and she did not regain her normal vision till September 7th. The child was born alive, and though small and very feeble for several months has developed into a very healthy-looking babe.

The amaurosis in this case served as the warning of the still further peril that was in store for her, and made it possible to extend the aid which she required, with that promptness which is essential to its success. In cases of this character, which have already gone so far as to render the patient blind, we may take it for granted that convulsions will invariably follow. And both to avoid this eventuality and to guard against permanent injury to sight, if the pernicious influence to which it is subjected be permitted to continue too long, I think it fully justifiable to terminate the pregnancy, especially at a period when the child is viable.

I have already mentioned that all forms of kidney trouble may lead to the amaurosis just described, and I would take occasion to make the suggestion, that the transitory amaurosis that has in isolated cases been observed in intermittent fever, and which has been referred to by Leber,¹ may have been caused by injuries to the kidneys that were inflicted in the congestive stage. I have been led to this opinion by the able paper which Prof. I. E. Atkinson recently read

before the Clinical Society of this city, in which he described kidney disease as a complication of malarial fevers.

To summarize, I would say:

1. That when amaurosis suddenly overwhelms a patient in both eyes with no ophthalmoscopic change, uræmia should be suspected even in the absence of any other prominent uræmic symptom.
2. That uræmic amaurosis will continue only as long as the uræmia exists, and will disappear when the function of the kidney is reestablished. When permanent injury to sight is observed, it may be due to preëxisting retinal changes, not at all uncommon in Bright's disease.
3. That the chances for a full return of sight are somewhat impaired when the patient has been the subject of recurring attacks.
4. That by exhibiting jaborandi and other means for inducing free diaphoresis and by free purgation a catastrophe may be averted in the general forms of uræmia, but when it occurs in pregnancy premature labor is the only remedy which promises safety to the patient.

LITHOTOMY AND LITHOTRITY IN THE MEDICAL MISSIONARY SOCIETY'S HOSPITAL, CANTON, CHINA, IN 1883.

BY J. G. KERR, M.D.,
OF CANTON, CHINA.

IN THE MEDICAL NEWS for April 7, 1883, a list of lithotomy and lithotritry operations in the Medical Missionary Society's Hospital, for 1882, was published. Of the former there were forty-seven operations, with two deaths; of the latter, twenty-three operations, with one death.

I now send, in continuation, a list of the operations for 1883. The number is not so great as in the previous year, owing partly to the bad state of my own health, and partly to the excitement following the riot of the 10th of September, and the subsequent rumors of war with France.

It will be seen that all the cases operated on during the year have been successful. The only qualification to be made to this statement is in reference to lithotomy case No. 33, in which the result is uncertain, the patient having been taken away while still in a weak, but by no means hopeless condition.

Reckoning from the last fatal case of 1882, there were sixty-seven consecutive cases of successful lithotomy, or sixty-six cases, if the doubtful one, No. 33, ended fatally. The two years give for lithotritry forty-six cases, with one death.

Three females were under treatment for urinary calculus. One of them was relieved by lithotomy, and a large triangular stone weighing nearly two ounces was extracted. It was partly in the urethra, so that the staff could not be passed into the bladder. The long distention of the neck of the bladder had paralyzed the sphincter, and it is doubtful if ability to retain the urine is ever recovered. In other respects the relief of her sufferings was complete. Another patient was operated on by lithotritry, and the calculus removed at one sitting by Bigelow's aspirator. The third female was a girl, who was not in a fit state for the operation.

¹ Graefe and Sämisch, Handbuch d. gesammten Augenheilkunde, vol. 5, p. 960.

Lithotomy Operations in Medical Missionary Society's Hospital, Canton, China, in 1883.

No.	Age.	Residence.	Occupation.	Duration.	Date of Operation.	Chemistry.	Diam't'r, inches.	Weight, oz. dr. scr.	Result.	Remarks.
127		Nam-hoi.	Weaver.	2 years.	Jan. 10, 1883.	Urates.		0 3 2	Recovery.	Crushed Dec. 30, 1882; cystitis; no fragments came away; median operation.
26		Sam-shui.		1 year.	Jan. 11, "	"	1½ x ¾	0 3 2	"	
36		Shun-tak.	Laborer.	8 years.	Feb. 13, "	"	2½ x 1¾ 2½ x 1½	4 6 0	"	2 calculi, also 1 in urethra; cystitis; wound healed in 12 days.
437		Tung-kun.	Farmer.	5 "	Feb. 28, "	"	1½ x 1½	1 1 2	"	Hemorrhage, controlled by tampon in rectum.
514		Tsung-fa.		9 "	March 29, 1883	Urate of Ammo.	1½ x 1½	1 0 2½	"	
621		Fa-ün.	Farmer.	6 "	May 1, 1883.	Urates.	1½ x ¾	0 3 0	"	
711		Ko-iu.		4 "	May 7, "	"	2 x 1½	1 1 0	"	
813		Hoi-ping.		6 "	May 13, "	"	2 x 1	0 7 1	"	
913		Heung-shan.		5 "	May 13, "	"	1½ x 1½	0 7 0	"	
106		Pun-yü.		4 "	May 19, "	"	1½ x 1	0 7 0	"	
119		Fa-ün.		2 "	May 29, "	"	1½ x ¾	0 2 2½	"	
1213		Nam-hoi.		1 year.	May 30, "	"	1½ x 1½	1 2 1	"	
1310		Tung-kun.		4 years.	June 6, "	"	1½ x ¾	0 4 1½	"	
147		Pun-yü.		2 "	June 7, "	"	¾ x ¾	0 1 1	"	
1517		Pun-yü.		4 "	June 9, "	"	1½ x ¾	0 2 1½	"	
1622		San-ül.	Trader.	3 "	June 9, "	"	2 x 1½	0 7 2	"	
175		Pun-yü.		2 "	June 12, "	"	1½ x ¾	0 2 0	"	
184		Pun-yü.		1 year.	June 20, "	"	¾ x ¾	0 1 0	"	
1910		Pok-lo.		7 years.	July 3, "	Oxalate of Lime	1½ x 1½	0 5 0	"	
2033		Heung-shan.	Farmer.	3 "	July 20, "	Urates.		1 1 0	"	Had been crushed twice; median operation.
214		Sz-üi.		2 "	Aug. 8, "	"	¾ x ¾	0 0 1½	"	
2251		Pun-yü.	Seaman.	2 "	Aug. 9, "	"	1½ x 1½	1 1 1	"	
2310		Nam-hoi.		5 "	Sept. 5, "	"	1½ x 1½	1 0 ¾	"	
2412		Pun-yü.		2 "	Sept. 5, "	Phosph. of Lime	1½ x 1½	0 7 1	"	
2516		Pun-yü.	Farmer.	10 "	Sept. 6, "	Urates.	1½ x 1½	0 6 0	"	
2624		Tsang-shing.	Farmer.	1 year.	Sept. 14, "	"	1½ x 1½	0 6 1½	"	
277		Tsang-shing.		4½ years.	Sept. 26, "	"	¾ x ¾	0 1 1½	"	
2839		Pun-yü.		4 years.	Sept. 26, "	"	2½ x 1½	1 7 2	"	Female.
2921		Tsang-shing.	Farmer.	3 "	Sept. 27, "	"	1½ x 1½	0 6 0	"	
308		Kwai-shin.		2 "	Oct. 4, "	"	1½ x ¾	0 2 0	"	
314		Ko-iu.		4 mos.	Oct. 23, "	"	¾ x ¾	0 0 1	"	
325		Pun-yü.		2 years.	Oct. 30, "	"	1½ x 1	0 3 1	"	
3310		San-ül.		4 "	Nov. 8, "	"	1½ x 1½	0 6 0	"	Result uncertain.
3429		Tung-kun.	Farmer.	2 "	Dec. 12, "	"	1½ x 1½	1 1 1	"	

Lithotritry Operations in the Medical Missionary Society's Hospital, Canton, China, in 1883.

No.	Age.	Residence.	Occupation.	Duration.	Date of Operation.	Chemistry.	Weight, oz. dr. scr.	Result.	Remarks.
144		Tsang-shing.	Farmer.	12 years.	Jan. 9, 1883.	Urates.	0 1 1	Recovery.	1 sitting; Bigelow's aspirator used.
230		Tsing-ün.	Trader.	1½ "	March 8, 1883.	"	0 2 2	"	" " " "
335		Hoi-ping.	Farmer.	2 "	March 22, "	"	0 2 1½	"	" " " "
438		Nam-hoi.	Farmer.	3 "	April 28, "	"	0 ½ 0	"	" " " "
541		Pun-yü.	Seaman.	2 "	May 17, "	"	0 0 2	"	" " " "
630		Pun-yü.	Farmer.	1½ "	May 17, "	"	0 1 1	"	urethra too small for the tube.
726		Pun-yü.	Farmer.	1 year.	May 22, "	"	0 3 0	"	Bigelow's aspirator.
861		Heung-shan.	Farmer.	3 years.	May 26, "	"	0 4 1	"	2 sittings; Bigelow's aspirator.
924		San-hing.	Laborer.	7 "	May 31, "	"	"	"	" " " "
1061		Tsing-ün.		3 "	July 7, "	"	0 2 0	"	1 sitting; Bigelow's aspirator; patient a female.
1158		Heung-shan.	Farmer.	4 "	June 8, "	"	1 0 0	"	3 sittings; Bigelow's aspirator.
1247		Pun-yü.	"	4 "	June 12, "	"	0 0 1	"	this case crushed a year ago.
1344		Tung-kun.	"	4 "	July 27, "	"	0 1 2	"	1 sitting.
1460		Tsang-shing.	"	4 "	July 27, "	"	1 0 0	"	2 sittings; Bigelow's aspirator used; this case crushed last year.
1530		Sam-shui.	"	1 year.	Sept. 5, "	"	0 2 0	"	1 sitting; Bigelow's aspirator.
1642		San-ül.	"	1½ year.	Sept. 13, "	"	0 1 0	"	" " " "
1738		Tung-kun.	"	1 year.	Sept. 30, "	"	0 3 1	"	" " " "
1845		Tung-kun.	"	2 years.	Oct. 13, "	"	0 2 1	"	" " " "
1958		Tsang-shing.	"	4 mos.	Oct. 16, "	"	0 0 1	"	" " " "
2033		Heung-shan.	"	1 year.	Oct. 20, "	"	0 1 0	"	Bigelow's aspirator used.
2163		Hok-shan.	"	1 year.	Oct. 25, "	"	0 0 1	"	" " " "
2253		Pun-yü.	"	7 years.	Dec. 16, "	"	0 0 1	"	this case crushed two years ago.

Another patient had renal calculus. There was a fistulous opening in the lumbar region, resulting from abscess, brought on probably by renal obstruction. On enlarging this to remove what was supposed to be a piece of necrosed bone, a small calculus was brought away in the forceps. The kidney had been destroyed by the inflammation attending the abscess, as no urine was discharged from the fistula.

During the year, six deaths from urinary calculus, previous to operation, occurred in the hospital. From one of these the stone was removed post mortem by Dr. J. F. Wales, physician to the foreign community in Canton. It weighed six ounces, and could only be extracted whole by doing damage which in the living subject must have been fatal.

The modification which I have proposed of Bigelow's evacuating-tube has been found, on trial, to work admirably. This consists simply in curving the tube to a right angle, at a point about one-third of its length from the outer end, so that the debris, on reaching this angle, falls by force of gravity into the receiver. This shortens very materially the distance from the bladder to the point where the fragments fall, and, of course, lessens the amount carried back by the current.

THE USE OF COLLAPSIBLE METALLIC TUBES IN THE DISPENSING OF OINTMENTS IN OPHTHALMIC PRACTICE.¹

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THIS method was brought to the author's notice about two years ago by a suggestion from an artist-patient, and from noting its good use in connection with ointments for general skin disease. He does not in any way claim that the idea is new, but thinks that, after some personal trial, his experience with the plan is worthy of record.

The advantages are several:

First. Cleanliness. The material is enclosed in a perfectly new and clean tube, the drug thus being free from any deleterious influence by access of extraneous matter.

Second. Economy. No more ointment than is absolutely necessary will be used at each application. None can be lost by carelessness, or accident in upsetting, or from breakage, as in glass jars or earthen pots.

Third. No exposure of the drug to the atmosphere. The preparations are practically sealed, the tube always being completely filled; consequently, all of the evil effects from contact with the air are avoided.

Fourth. Readiness of application. There is no necessity for an article to apply the ointment, the tube itself serving as a quick and efficient means.

Fifth. Better regulation of amount to be used. This is obvious when we consider that any degree of pressure can be brought to bear upon the tube in forcing out certain desired quantities of the contained material.

Sixth. Less risk and greater ease in carriage. A small cylinder closed by a tightly screwed cap, is more convenient and safer to have about the person than a box or a pot with a loose lid or top. The tube can be easily carried in a pocket, whilst no amount of ordinary pressure can burst its walls or force the cap.

The objections that have been found are:

First. In labelling. Although this has not been any worse than in the ordinary form of boxes, pots, and jars, yet many attempts have been made to obviate the difficulty experienced by the loosening of paper labels from the body of the tube and the proposed large flat caps. All of these attempts had to be resigned in favor of a wired pasteboard tag.¹

Second. Free expulsion of the ointment. At first this seemed to present an almost insurmountable difficulty; but, by experiment with a variety of special ointments through different sized openings, the following rough rules were obtained: Vaseline and rose-water ointments, holding small percentages of drugs, as well as nearly all of the oleates, are expelled with great facility through the ordinary opening of about one-half millimetre diameter. Stiffer ointments, and those containing a powder in any quantity, as a rule, require an increase in the size of the aperture to about two millimetres in diameter.

Third. Chemical decomposition. This is the most serious objection, and the one necessitating the entire abandonment of the method, except in cases either where drugs with no real or harmful affinity for the metals of the tubes are employed, or that they shall practically become inert by the extremely small amounts embodied in the ointments used.

Conclusion. In the dispensing of eye ointments, collapsible metallic tubes are useful by reasons of cleanliness, economy, non-exposure of the contained drug to the atmosphere, readiness and facility of application, better regulation of the amount to be used, and less risk and greater ease in carriage; whilst they are contraindicated by difficulty of expulsion of stiff ointments, and chemical change, causing either a deposition of some of the elements of the tube into the ointment, with a thinning and breakage of the tube walls, or an action upon the contained delicate substance, rendering it either useless or harmful. Consequently, at present, until some better material can be employed in the manufacture of collapsible tubes, it will be better to continue the use of wood, glass, and porcelain, to insure purity of drug and surety of action.

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MEDICAL PROGRESS.

GASTROSTOMY.—MR. PAGE performed this operation at the Newcastle-on-Tyne Infirmary about five weeks ago. The patient was a stonemason, about forty-six years of age, and, except for being a heavy drinker,

¹ Mention might be made of the possible good use of a well-recommended paste, containing honey and tartaric acid amongst its ingredients, in producing the best adhesion between a paper label and a metallic tube. This was tried, but no reliance could be placed upon the results with the materials employed.

¹ Read before the Philadelphia Ophthalmic and Aural Book-Club Association, April 21, 1884.

there was nothing to point to as a cause for the symptoms of dysphagia, which came on gradually, but became very urgent about the beginning of the present year. It is nearly a month since he was admitted to the infirmary, and fully three weeks since the operation. Mr. Page made an incision through the rectus muscle on the left side, and to this the stomach was secured by wire sutures, and opened three days later, the patient in the meantime being sustained by nutrient enemata and hypodermatic injections. When the gastric fistula was fully formed, he was fed through an elastic tube, and at the present time, although he is still being fed by the tube, he has recovered some power in swallowing, and has increased in weight four pounds since the operation. At the time of the operation, he was harassed by a hectic cough, and this somewhat induced Mr. Page to make his opening through the rectus, the structure of the muscle acting in a valvular manner, and so preventing expulsion of the contents of the stomach during the act of coughing. The presence of the tube appeared to give the patient, who was able to walk about the ward, very little trouble. The case is doing well.—*Lancet*, July 12, 1884.

AMORPHOUS BORATE OF QUININE.—Borate of quinine occurs as an almost crystalline powder, of an amber color, slightly distinct odor, bitter taste, but less pronounced than that of hydrochlorate of quinine. It is very soluble in water.

FINKLER and PRYOR have given it in capsules in doses of gr. vij to xv, repeated every half hour or hour, so as to give a maximum dose of gr. xlv in from two to four hours. It has been given in the Clinic at Bonn, in a large number of cases of tuberculosis, and in acute and chronic gastric catarrh. There were, among these cases, patients in whom the least error of diet caused vomiting. None of them vomited after taking the borate of quinine, nor did it cause pain when administered to phthisical patients who had chronic catarrh of the stomach. Besides its action on the stomach, borate of quinine may be used in these cases on account of its disinfecting action on the stomach and intestines. The daily absorption of gr. vij to xv, for weeks at a time, causes no unpleasant symptoms on the part of the digestive tract.

Patients with high fever bear the drug well. It seems to be well borne, especially when followed by a little water, wine, or cognac. The subjective troubles, especially the aural, are not so pronounced as after the ingestion of hydrochlorate of quinine. It was tried in 5 cases of typhoid fever, 1 case of septic fever, 3 cases each of pneumonia and erysipelas, and in a typical case of trigeminal neuralgia. It was shown that doses of from gr. vij to xlv always reduced the temperature.

It was observed that after the administration of the borate, there was a sudden and rapid fall of the temperature. By giving it in the afternoon, an evident effect was observed in the temperature of the next morning. By frequently taking the temperature it was ascertained that while the effect of a dose continued for quite a long period, the temperature was not sensibly affected until from two to four hours after the ingestion of the drug.—*Centralbl. für die gesam. Therap.*, May, 1884.

RUPTURE OF THE SIGMOID FLEXURE IN NEW-BORN CHILDREN.—ZILLNER made post-mortem examinations of four children, who had died, within twelve or fifteen hours, of peritonitis from rupture of the sigmoid flexure. These cases are interesting from a medico-legal point of view. It was questionable if the rupture was not produced by violence in giving enemata. It seems scarcely probable that any usual violence during delivery could have caused the accident. Zillner also offers the following explanation. During the labor the mother presses upon the abdomen of the child, thus fixing the sigmoid flexure, which is filled with meconium, or else draws it down into the pelvis. Then comes a moment when the pressure on the abdomen is so strong that the sigmoid flexure comes between the lumbar vertebræ or the linea arcuata on one side, and the abdominal walls on the other, until it is compressed tightly and cannot move. The meconium can either slip away toward the descending colon, or into the rectum, slight pressure only being necessary to rupture the upper part of the flexure. Experiments seem to bear out this theory.—*Centralbl. f. klin. Med.*, July 5, 1884.

EXTIRPATION OF THE LARYNX.—A. PREETORIUS reports (*Deutsche Zeitschr. f. Chir.*, Bd. xix. Hft. 6) a case in which he removed the larynx of a fifty-four year old woman for carcinomatous disease. Tracheotomy was performed fourteen days before the operation. During the operation the larynx was closed by means of Trendelenburg's condom-canula. This remained in place until the afternoon, when Michael's canula with a rubber bag was introduced through the upper aperture of the trachea, and the bag filled with a mixture of glycerin and water. The Trendelenburg's condom-canula, and Michael's with the rubber bag were used alternately for several days. The patient recovered.—*Centralbl. f. Chirurgie*, June 21, 1884.

ARRESTED LABOR FROM RIGOR MORTIS OF FÆTUS.—DR. ROBERT BOXALL reports this interesting case, which occurred in the General Lying-in Asylum, York Road. The head would not descend, and the lower blade of the forceps was used to bring it down through the cervix. The blade was then removed, and labor terminated naturally. The fœtus was of a mottled blue color, and stiff.—*Lancet*, July 12, 1884.

CHRONIC HEART DISEASE AND PREGNANCY.—This is the subject of an inaugural dissertation by G. WESSNER, of St. Gall, who gives the following *résumé*, after a careful review of the literature of the subject:

1. There is no specific physiological hypertrophy of pregnancy. The heart of the pregnant woman only obeys the general law that the mass of the cardiac muscle increases with that of the body.

2. Other grounds for believing in a physiological hypertrophy are faulty, and cannot be brought into pathological relation.

3. The conditional hypertrophy of the heart, of pregnancy, caused by increased body-weight, is so slight that it can only be considered as a danger in very severe heart trouble.

4. The causes of the unfavorable influence of pregnancy on heart troubles, lie not so much in the in-

creased cardiac activity, on account of the pregnancy, or the pressure suddenly removed by labor, and the high position of the diaphragm, as in the psychical and physical fatigue of labor, which reacts on the heart.

5. But, as statistics show, these are endured in by far the greater number of cases, without especial damage. It seldom occurs that severe heart trouble is specifically due to pregnancy, but it more usually happens that we have to do with very severe heart disease as a secondary complication.

6. As malignant endocarditis occurs especially in the course of old heart diseases, so it also seems to occur after labor, as septic poisoning.

7. The prognosis is considerably better for both mother and child, if it exists from the beginning.

8. The treatment is symptomatic, not the performance of premature delivery, but hastening labor if necessary.

Of this thesis, KRIWOROTOW, the translator, makes the following remarks: Wessner has drawn these conclusions from a collection of 77 cases in German and other literature, which showed various forms of heart trouble at birth. In these cases 42.9 per cent. had no, or only slight symptoms; 19.5 per cent. had severe symptoms; and 37.6 per cent. died. But Wessner, after critical examination of these cases, very much reduces the percentage, while he considers the further complications.

The independently worked up material gives striking and interesting results: Of 25 women with heart disease, which were observed in the Clinic at Berne, there were 93 labors and only 1, a primipara, died. She was twenty-eight years old, had mitral insufficiency and double pneumonia, and during the fourteen days preceding labor had extensive oedema of the lower limbs. The child was born dead. At the autopsy of the mother, who died on the day of labor, the clinical diagnosis was completely verified, the kidneys being also markedly congested. The other 24 women had no especial trouble.—*Centralbl. für Gynäk.*, June 21, 1884.

SECONDARY SUTURE OF THE MEDIAN NERVE.—At a recent meeting of the Academy of Sciences, M. Tillaux related two cases of secondary suture of the median nerve followed by rapid restoration of the functions in the parts depending upon it. The first was a young girl who cut the front of her wrist whilst cleaning some windows in November, 1883. The wound healed without suture of the nerve being performed, and there remained complete paralysis of all the parts supplied by it. Incapable of working, the girl went to the Beaujon Hospital to seek relief. The parts supplied by the median nerve were found to be colder than on the opposite side, and of a slightly violet color. Notwithstanding the discouraging nature of the case, M. Tillaux decided to give the patient a chance. The ends of the nerve were found about a centimetre distant from one another, the central one bulbous, the peripheral atrophied. They were cut so as to present a fresh equal surface and carefully drawn together by a hair suture (*crin de Florence*). An antiseptic dressing was applied and the limb immobilized in extreme flexion. Two days after the operation sensibility began to return and increased daily. Six weeks later she left the hospital with sensibility and movement entirely restored. The other pa-

tient was a woman, who, witnessing the result in this case, begged M. Tillaux to operate upon her also, notwithstanding that the accident had occurred fourteen years before. The operation was identical, and the next day sensibility began to return, and was soon entirely restored. The physiological curiosity of these cases lies in the fact that when examined microscopically (by M. Ranvier) the portions of nerve removed exhibited no trace of cylinder-axis, and that it is difficult to explain the restoration of function by our present ideas on the subject. M. Tillaux's observations may be the starting-point of an important discovery.—*Lancet*, July 19, 1884.

ECHINOCOCCUS OF THE SPLEEN.—PROFESSOR MOSLER has recently written a monograph on this subject. Besides the twenty-eight cases tabulated by Niesser in 1877, Mosler has collected twenty-eight others, and from a study of the whole number he draws the following conclusions:

1. Sex seems to give no predisposition toward echinococcus of the spleen.

2. The affection is most usual between the ages of twenty and thirty years.

3. As regards symptomatology, the signs of the tumor may be so slight as to give no symptom during life. In other cases the first symptom is an intense pain after some exertion, or after labor, showing inflammation of the echinococcus cyst.

4. The diagnosis rests mainly on the physical signs, and is difficult. These tumors differ from other tumors of the spleen in their fluctuation.

5. The prognosis of solitary echinococcus of the spleen is certainly more favorable than when other organs are involved.

6. Internal treatment amounts to nothing. The sac must be opened by means of scissors, and Volkmann's method for suppurating echinococcus of the spleen followed.—*Deutsche med. Wochenschr.*, July 3, 1884.

TRACHEOTOMY IN CROUP AND DIPHTHERIA.—DR. LUENING, assistant to Dr. Krönlein, has recently written a monograph on this subject, in which he has collected statistics from 1868 to 1882, including the severe epidemic in Zürich in 1881-82.

Croup and diphtheria are anatomically different, but etiologically and therapeutically one. Of 295 cases twenty per cent. got well without operation, and with a slight degree of laryngeal stenosis. Tracheotomy was performed in eighty per cent. of the cases, and thirty-nine per cent. recovered, giving fifty per cent. of recoveries with and without the operation. The operation seems to be growing in favor from year to year. In 1881 there were forty-five operations in Zürich, with forty-five per cent. of recoveries, and in 1882, up to March, there were forty-five with forty-two per cent. of recoveries.

There is no contraindication against the operation in laryngeal stenosis. It was successful in eleven out of fifty-two children under two years of age. When the child is asphyxiated, and apparently lifeless, the operation must be instantly performed, although, of course, the chances are against recovery. The operation should be performed earlier and oftener.—*Deutsche med. Wochenschr.*, July 3, 1884.

CANCER OF THE PANCREAS.—M. BABILLON, at a recent medical clinic, showed a specimen of cancer of the pancreas, taken from a patient of M. Débove. It presented a number of carcinomatous nodules, as well as a multilobar cyst seated near the inferior border. The patient died within fifteen days after his admission to the hospital. He did not vomit, but the food was simply regurgitated almost immediately after eating. There was no hæmatemesis or mælena, but there was habitual constipation and the abdomen was retracted. The epigastric region was painful and the seat of general puffiness, without appreciable nodules. The diagnosis of cancer of the stomach was made.

The autopsy showed a very large aneurismal dilation of the arch of the aorta. The left lobe of the liver extended across the epigastric region, and contained carcinomatous nodules. There was carcinoma of the stomach, near the cardia, which involved the neighboring lymphatic ganglia. As before stated, the pancreas was chiefly invaded, and contained a collection of puriform fluid.

This case is interesting from several points of view. It would seem that the aneurism of the aorta and the dilatation of the thoracic aorta which ended abruptly at the diaphragm, were perhaps caused in some way by the pressure of the carcinomatous mass upon the abdominal aorta. It is again interesting from the fact that there was no true vomiting, but almost immediate regurgitation of the food after taking it, which led to the diagnosis of cancer of the stomach, and presumably of the cardiac portion; and lastly, on account of the cystic and carcinomatous alterations of the pancreas, which should have been accompanied by glycosuria; but the urine contained no sugar.

Among the many theories which have been proposed to explain the pathogenesis of diabetes, there is one which makes the pancreas play an important part in its causation. According to this theory, which was especially advocated by Popper, and which is sustained by a certain number of anatomical facts, such as fatty degeneration with sclerosis, atropia, cancer, and obliteration of the pancreatic duct; diabetes may be explained in various ways. The sugar produced by the affected pancreas may be insufficiently elaborated, or the obstacles to the performance of the pancreatic functions cause absorption of the pancreatic ferment, which, taken up from the circulation by the liver, renders the transformation of glycogen into sugar more active. Again, the pancreatic disease, by opposing the transformation of nitrogenized materials, causes a state of inanition, and sugar, continuing to form, is not consumed by the organism (Fick and Heidenhain). Lastly, it is said that the affected pancreas, not being able to furnish, for the saponification of fats, a sufficient quantity of fatty acids to combine with the glycogen, and form the biliary acids, there is an excess of glycogen in the liver, and, consequently, the quantity of sugar formed in that organ is increased. The case above recorded seems opposed to the pancreatic theory of diabetes.—*Progrès Méd.*, July 5, 1884.

BUTTON IN THE LARYNX.—SCHRUMPF reports the case of a six months old child, which apparently got a chemise button into its larynx. Tracheotomy was performed, but the button could not be found. The child

died of broncho-pneumonia on the fourth day, and the button was found against the posterior wall of the œsophagus at the level of the cricoid cartilage.—*Centralbl. f. Chirurgie*, June 21, 1884.

INTESTINES ADHERENT BEHIND UTERUS.—MR. LAWSON TAIT reports the case of a woman, aged thirty-two years, who presented herself at the Birmingham Hospital early in November, 1883, complaining of constant pelvic pain dating from her last confinement, and much aggravated by the patient having "strained herself" six weeks before. On examination, the uterus was found to be somewhat fixed with a mass behind it, very tender on pressure, and clearly cystic. But for the fact that she complained of no increase of pain before or during menstruation, he should have diagnosed the case to be one of occluded and distended tube. As it was, he made no diagnosis, but advised abdominal section. This the patient readily agreed to, and he performed it on November 8th. He found a good deal of matter in the pelvis, and a coil of intestine adherent in the cul-de-sac. He undid the adhesions without much difficulty and closed the abdomen. She left the hospital on November 28th, and has been entirely free from pain since. He saw her last on July 7th, and found that she has had no return of her old symptoms, and is in perfect health.

This case is a very instructive one, for the physical signs were precisely those of pyo- or hydro-salpinx; and if it had happened that the patient had suffered much at menstruation, he certainly should have set it down as a case of one or other of those diseases. Suppose that, under this belief, he had acted as some (who have had no experience) advise, suppose he had tapped from below, he should have done no good; he would probably have made his patient worse; he might even have killed her. On the other hand, following his rule of opening the abdomen, he was able, with very little difficulty, to cure completely a condition which distressed the patient, which put her in constant risk of her life, and for which no other remedy was possible.—*Med. Times and Gaz.*, July 19, 1884.

SUPRAPUBIC CYSTOTOMY.—ADOLPHE GARCIN has recently published an inaugural essay on this subject. To the 106 cases recorded during the years 1881 to 1883, inclusive, he adds 10 new cases; 9 by E. Boeckel and 1 by J. Boeckel. The purpose of epicystotomy is threefold: first, for removing tumors of the bladder; secondly, for cases in which catheterism cannot be performed; and, thirdly, for the removal of calculi and foreign bodies from the bladder. In the last set of cases the mortality was about 24.4 per cent. Still, of 23 deaths, 12 occurred from pyelitis, erysipelas, etc., and 5 cases out of 11 of infiltration of urine after the operation. The majority of the cases which recovered occurred between the ages of ten and twenty years of age; for these ages the tables show 26 recoveries and only 1 death. As advantages of the operation over the perineal operations may be mentioned: the greater simplicity of the operation, the small amount of hemorrhage, the impossibility of wounding important organs, the ease with which the calculus is extracted, the avoidance of injuries from bruising, the possibility of thoroughly examining the bladder, and of keeping the wound aseptic. The single

danger of infiltration of urine and perivesical phlegmon, are also consequences of the perineal operation; besides purulent infection, secondary hemorrhage, incontinence, sterility, and persistence of a fistule, which are also consequences of the perineal operation. It is especially worth of remark, that a fistule has never resulted from an epicystotomy.

The indications for the hypogastric operation for calculi or foreign bodies are as follows: 1. Impossibility of lithotripsy on account of the hardness and large size of the calculus. 2. Calculus formation around a foreign body. 3. Encapsulation of the calculus. 4. Situation of the stone in a sac behind an hypertrophied prostate. 5. Great prostatic hypertrophy. 6. Great narrowing of the urethra. 7. Irritability of the vesical mucous membrane. 8. Anchylosis at the hip-joint. 9. Considerable renal changes. Of course, these indications are to be applied only to males.

It is scarcely necessary to say that the patient should be placed in the best possible conditions of health before the operation, and all irritation of the vesical mucous membrane should be avoided, in so far as possible. In order to render the operation easier, from f3vj to 3x of borated or carbolated water should be thrown into the bladder, and ballooning of the rectum be resorted to. The question as to whether the wound should be drained or completely closed up, must be determined by the surgeon in individual cases. Suture of the bladder has been used in 20 cases in the past four years, and only 2 healed by first intention. On the other hand, 7 cases died of urine-infiltration, in 5 of which the bladder was sutured. Garcin advises drainage of the bladder with strong double drainage-tubes, the outer wound being gradually closed from the upper part, by sutures. For dressing he recommends an antiseptic sponge, which acts as a siphon to the drainage-tubes. At the beginning of the second week the drainage-tubes may be generally replaced by the permanent catheter, or by repeated catheterism. By such treatment the process of recovery will generally occupy about forty-one days.

J. J. MACAVEJEV gives (*Vratsch*, Nos. 12 and 13, 1884) a *résumé* of his operations of epicystotomy. He has performed the operation eleven times, and sutured the bladder once. Of the 10 cases in which the bladder was not sutured, all were between the ages of two and seventeen years, and in the majority of the cases there were complications on the part of the urinary apparatus. 5 cases recovered in four weeks, 3 in from eight to twelve weeks; 2 cases died, 1 of erysipelas, and 1 of inanition. In his last case, Macavejev sutured the bladder with catgut, the mucous membrane not being included. An antiseptic dressing was used and the catheter removed on the seventh day. The patient was well in a month.—*Centralbl. für Chirurgie*, June 21, 1884.

MALARIAL ORCHITIS.—A. ZACCO reports a case of a man, æt. thirty-five years, previously in good health, who had an attack of orchitis on the right side, with a complicating epididymitis, without having had any venereal disease, or any affection of the urinary organs. After this the patient had intermittent fever for three months, complicated with tertian, and later with quotidian, and finally a continuous fever set in with

orchitis. Every method of treatment was used without resulting favorably. But after it was discovered that the continuous fever reached its acme about noon, large doses of quinine were commenced on the fourth day, and in two days the patient was very much better. It was observed that at the height of the fever there were slight swelling and pain of the testicles, which, however, completely disappeared with the fever. Zacco believes that the orchitis was due to the direct action of the malarial poison, which had become implanted in the testicles.—*Centralbl. für klin. Med.*, July 12, 1884.

GANGRENE OF UTERINE FIBROIDS AND THE DANGERS OF PARTIAL EXTIRPATION.—MERNER (Thèse de Paris, 1884) reports the case of a woman forty-four years of age, who had a submucous myoma, as large as a child's head, situated in the anterior wall of the uterus. An operation was performed and a portion of the tumor was left behind, which caused death in fourteen days by sepsis. This case, as well as other similar cases reported, caused Merner to write up the subject. He concludes that such tumors have a tendency to suppurate and cause death in spite of the most painstaking antiseptics, and he takes the position that all methods of operating which will only partially remove the tumor are bad, and should only be used when no other method can be employed.—*Centralbl. für Gynäkol.*, July 12, 1884.

THE OPERATIVE TREATMENT OF TUBERCULOSIS.—DR. A. P. SELENKOW (*Vratch*, Nos. 16 and 17, 1884) has an article on this subject. In tuberculosis of the bones and joints the diseased bones were resected, the affected soft parts carefully removed, and an antiseptic dressing applied. In order, however, that the remaining germs should not develop, the dressing and drainage-tubes were removed in three or four days, the secretions pressed out, through drainage established by means of an elastic catheter, and a forcible injection, generally of a ten per cent. alcoholic tincture of iodine, made into the wound cavity. Closure of the wound should be treated by reopening it, and reinjection of iodine. After the superfluous iodine has run out, the drainage-tube should be replaced and a fresh dressing applied. This should be repeated every three or four days until there is no more fluid secretion. Finally the drainage-fistula closes, and a scab forms. On the first appearance of a return of the trouble the fistula must be scraped out again and systematic syringing employed. No irritation of the wound is seen under this treatment; the vicinity of the wound must be protected from the iodine by a coating of vaseline. Selenkow has used resection in six cases in different joints, two being very extensive injuries. Both healed without the occurrence of fistules. In three of these cases iodoform was also added to the iodine, and directly applied to the fresh wound, or applied in the form of pencils. This form is highly valued by Selenkow, as the energetic action of the iodine seems to supplement the weak but lasting action of the iodoform. Iodoform is equally efficacious after the opening of scrofulous and other abscesses, though it is not to be recommended in congestive abscesses, in which the primary congestion cannot be removed, as for example in spondylitis.—*Centralbl. für Chirurgie*, July 12, 1884.

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THE CHOLERA OUTLOOK.

THE favorable cholera reports from the south of France indicate that the disease is fast disappearing from the cities of Marseilles, Toulon, and Arles, though it is gradually extending among the villages north of those places, and has crossed the Alps into some of the smaller towns of Italy. Several "sporadic" cases are said to have occurred in Paris, and one death is reported at Lyons. The total number of deaths from the disease, from its outbreak up to August 2d, is reported to be at Marseilles 1248, and at Toulon 638.

Not only has the progress of the cholera been very slow, but the mortality record shows that its fatal results have been far below those of former visitations, and leads us to hope that it may be held in check beyond the sea by continued watchfulness and the employment of the hygienic and other measures now being applied in the countries more immediately threatened with the disease.

Notwithstanding the favorable outlook, the utmost vigilance should still be exercised by those in charge of health matters in the United States—national, state, and municipal—and there should be no relaxation in the efforts being made to ward off the disease or prepare for its reception. No other disease carries with it such a widespread terror, and as its march is governed by the laws which govern travel, it would seem that its progress should be arrested by an intelligent supervision of those lines of human intercourse which would, unprotected, bring it to us; and that, with the Government's vessels patrolling our coast, with its watchful officers at every port, with our State and municipal

authorities guarding the interior lines, and keeping our towns and cities clean, the progress of the disease cannot give cause for serious alarm.

PULMONARY LESIONS PRODUCED BY INHALATION OF PHTHISICAL SPUTUM AND OTHER ORGANIC SUBSTANCES.

IN Virchow's *Archiv* for June, 1884, Dr. W. WARGUNIN, of St. Petersburg, publishes his investigations in this line of experimental research. After reviewing the work of Tappeiner, Klebs, Bertheau, Schottelius and others, he concluded that the tubercular nature of the primary lesions in the lungs of animals thus experimented on, was by no means clearly established by their experiments. He then sought, by following out the pathological processes in dogs from the beginning, to determine their nature.

The details of the experiments, which numbered 21, were in all respects carefully carried out. They were arranged in three categories: 1. A series of 11 dogs, in which the fresh sputum of patients suffering from well-characterized phthisis was used for inhalation, chiefly by Seigle's apparatus, but in two instances by a hand-ball apparatus; 2. A series of 3, in which the same kind of sputum, disinfected by carbolic acid and repeated boiling, was used; 3. A series of 7, consisting of 1, in which the sputum of a patient suffering from emphysema and bronchial catarrh, of 4, in which an infusion of Swiss cheese, and of 2, in which an infusion of wheat flour were employed. Two of the dogs in the first series were suffered to live, and showed no signs of illness; three of the whole number died of exhaustion, refusing all food; the rest were killed at various periods after the more or less frequent repetition of the inhalations. The three categories gave in every respect precisely the same result. The clinical picture was in all instances the same, and afforded none of the indications of a general sickness. The anatomical condition of the lungs presented macroscopic appearances exactly resembling acute miliary tuberculosis. Tuberculosis of other organs was not encountered.

Dr. Wargunin subjected all these specimens to careful microscopic examination, and he concludes, from due consideration of the clinical facts, the results, and the histology of the processes in the lungs, that in all cases the process is one and the same, and that it cannot be regarded as tuberculosis. He regards it as a lobular pneumonia, which in many respects resembles the desquamative pneumonia of Buhl. Etiologically, it is, however, to be referred to the category of pneumonia due to foreign bodies. He found that the inflammatory process which begins in the bronchioles, only secondarily affects the alveoli. The lung affection tended to complete restoration of the lung tissues when the

animals were placed under favorable hygienic conditions. Instead of destruction of the affected portions of the lung, with the formation of cavities, as he expected, he was surprised to find in two instances upon examination of dogs killed after six months, normal lungs. Koch's discovery of the tubercle bacillus, which was announced as the investigations of Dr. Wargunin were completed, appeared to establish facts wholly at variance with these results.

How could the fresh sputum of phthisical patients containing bacilli and the disinfected sputum, give rise to the same results as cheese and wheat flour? The only reply to this question lies in the assumption that even the bacilli of Koch are not specific. Wargunin does not hesitate to assert to-day that Koch's discovery requires much further corroboration; that it has thus far been worked out in too superficial a way for so important a question; and that it contains in itself much that is problematical. Without denying the parasitic nature of the infectious diseases, he insists that many things must be made clear before the etiology of tuberculosis will become so simple a matter as the discovery of the tubercle bacillus of Koch would appear to make it; in other words, that the doctrine of Koch as to the cause of tuberculosis calls forth a great number of questions which are but imperfectly or not at all answered by that doctrine in its present phase.

The wide difference between these results reached by Wargunin and those of Tappeiner, which were discussed in our issue for May 5, 1883, only goes to show how unsettled must still be regarded this great question of the nature and etiology of tuberculosis. In 18 experiments by Tappeiner in which tubercular sputum was inhaled, 17 were followed by tubercle of both lungs and pleura; in 4 there were in addition tubercular nodules in the kidneys, spleen, and liver. In one instance only was there disseminated desquamative pneumonia; while in Wargunin's 21 experiments summed up above, of which 11 were done with true tubercular sputum and 10 with indifferent substances, in all of the animals which died or were killed, being 19 out of the 21, there was found desquamative or broncho-pneumonia.

Still more striking is the difference when Wargunin's results are compared with those of Koch, as published in the second volume of the Imperial Health Reports. The latter observer employed for inhalation the cultures of bacilli obtained from phthisical cavities. All the rabbits and guinea-pigs experimented upon either died or were killed within 28 days, and invariably the lungs contained numerous tubercles, which were also present in the liver and spleen of those who survived longest. In the rats and mice the same results obtained, but the tubercles were smaller and less numerous.

It must be said of Koch's results that the masses described present many of the characters of caseous broncho-pneumonia, or desquamative pneumonia, and when we remember how entirely Koch's diagnosis of tubercle is based upon the presence of the bacillus, rather than upon any other anatomical criterion, while in Wargunin's observations, made for the most part before those of Koch, the diagnosis was based upon anatomical characters which, until Koch's discoveries, were considered distinctive, we cannot but think that herein may lie the reason of the difference noted. Would Koch and his followers regard the nodules of broncho-pneumonia in Wargunin's dogs as tubercles? Here is an important point to be settled before the true value of Wargunin's, and even of Koch's, experiments can be estimated. Observers must agree upon an anatomical definition of tubercle.

LAPAROTOMY IMMEDIATELY AFTER RUPTURE OF THE CYST IN THE EARLY MONTHS OF EXTRA-UTERINE PREGNANCY.

When rupture of the gestation cyst occurs in a case of extra-uterine pregnancy in the early months, the rule which has been urged by most obstetric authorities has been non-interference. But in 1849 an American physician, Dr. Harbert, suggested the propriety of laparotomy; and in 1866 the late Dr. Stephen Rogers, of New York, strongly advocated this practice in a paper read before the Obstetric Section of the American Medical Association. The late Dr. Parry, in his invaluable monograph upon Extra-uterine Pregnancy, published in 1876, gave this treatment his approval, but also stated that it had never been tried.

The trial has now been made, and with remarkable success. *The British Medical Journal*, for June 28th, contains a report of five cases of extra-uterine pregnancy, operated upon at the time of rupture, by LAWSON TAIT, and four of the patients recovered. Such a result is certainly very encouraging, especially when contrasted with that of the usually followed practice of non-interference; for, as observed by Dr. Parry, recovery is so rare that the physician has no right to allow the fact that it may occur to influence him in deciding upon a plan of treatment.

The difficulty of diagnosis has been presented by all who have considered the subject, as the chief objection to performing laparotomy; but Mr. Tait simplifies the matter by stating the question thus: If, however, it be found that the patient has been eight weeks or more without a period, that there is a pelvic mass on one side of the uterus and fixing it, and that sudden and severe symptoms of pelvic trouble and hemorrhage came on, the rupture of a tubal pregnancy may be at once suspected, and if an operation is to be done—and it clearly ought to be done—it must be done without delay.

The method of operation pursued by Mr. Tait is as follows: After opening the abdomen, the tube is tied below the point of rupture and cut off, and then the cyst, foetus, and appendages, blood-clots and serum, are removed; in three of the cases the foetus could not be found, but as two of these patients recovered, its being left in the abdominal cavity is shown to be harmless. An adherent cyst or placenta is not to be removed, but drainage of the abdominal cavity is then to be made.

We are glad to know that this plan of treatment, first proposed and urged by American surgeons, and put in practice by the bold Scotch surgeon of Birmingham, has proved so successful, and we feel hopeful that its general adoption will save many lives.

It is somewhat notable that Mr. Tait's statistics of laparotomy are directly the reverse of those given by Dr. Gaillard Thomas, in volume vii. of the Transactions of the American Gynecological Society. Of the results of non-interference in this accident, Dr. Thomas has seen five cases, of which four died, and one recovered.

At a meeting of the London Obstetrical Society, a little more than a year ago, Mr. Tait reported operating on seven cases of extra-uterine pregnancy, six of the patients recovering; two of these operations were done immediately after the rupture.

THE ABRUS POISON.

THE seeds of the jequirity plant have been very extensively used in India for criminal poisoning, especially of cattle, and have been employed to some extent as a remedial agent. Further, MM. Cornil and Berlioz announced last year to the French Academy that their poisonous powers were due to the presence in them of a peculiar microbe. This, if true, is a most extraordinary fact, indicating that everything is to be resolved finally into germs, and making it probable that hereafter man will be found to be nothing but a compound animal, a sort of branching coral with the bones secreted by the innumerable polyps or microbes of which the human compound organism is formed.

These circumstances lend both practical and scientific interest to the elaborate investigation just completed by Surgeons C. T. H. WARDEN and L. A. WADDELL of the Medical College Hospital, Calcutta. We are glad to announce and believe that there are other things in the universe besides bacteria, and that the *Abrus precatorius*, although not a virtuous plant, is not a germ factory, and does not spend its days and nights in the manufacture of bacteria, but accomplishes its nefarious purposes through a poisonous proteid—*abrin*—which seems to have many properties in common with the venoms of serpents. Messrs. Warden and Waddell seem to have done their work very carefully and

thoroughly, and in their little brochure entitled "The Non-bacillar Nature of Abrus Poisoning," Calcutta, 1884, not only give a clear account of their methods and results, but also of the means of distinguishing the abrus roots from those of true liquorice, which they resemble.

LITHOLAPAXY IN MALE CHILDREN.

UP to the age of fourteen, unless the stone is very small, the rule has been to resort to lateral lithotomy in male children; but a new departure has been made by SURGEON-MAJOR KEEGAN, of Indore, who tabulates in the *Indian Medical Gazette* for May, 1884, 24 cases of rapid lithotrity in children, with a degree of success that must be considered phenomenal. 7 cases, however, would be more correctly described as "very thorough lithotrity," as a tube was not used to evacuate the fragments, while the seventeenth case, which proved fatal, must also be excluded, as not less than three operations were required, and the evacuator was used only at the second sitting.

Of the 16 cases of litholapaxy in the strict acceptance of that term, that is to say, of crushing and evacuation of the fragments at a single sitting, every one recovered. 1 child was twenty months of age, 1 two years, 1 three years, 1 four years, 5 were five years of age, 2 seven years, 3 eight years, 1 was ten years, and 1 twelve years. The smallest stone weighed seven grains and the largest two hundred and forty grains, the average weight being seventy-one grains. Of the 13 in which the composition of the calculus is noted, 10 were uric and 3 phosphatic.

The lithotrites employed corresponded to Nos. 5, 7, and 8 of the English scale and the evacuating tube was equal to No. 9 of the same gauge. The time required to complete the operation varied from four to seventy minutes, or thirty-eight minutes on an average, but Dr. Keegan states that he would not hesitate to keep the patient under chloroform for two hours if it were necessary.

The results which we have briefly outlined indicate that Dr. Keegan has opened up a new and wide field for litholapaxy, which we hope will be submitted to a fair and patient trial. The operation differs from that performed in adults only in the small size of the instruments used, which should be manipulated with a light hand and great gentleness.

DR. WILLIAM OSLER, of McGill University, Montreal, is prominently and favorably mentioned in connection with the Professorship of Clinical Medicine in the University of Pennsylvania, rendered vacant by the transfer of DR. PEPPER to the Chair of Theory and Practice of Medicine. Dr. Osler is widely known as a talented scholar, a learned clinician, and a popular teacher, and his election, which

it is understood will be very acceptable to the Medical Faculty, would add undoubtedly to the high reputation which the University has always enjoyed.

Dr. Osler has just been invited to deliver, next spring, the Gulstonian lectures before the Royal College of Physicians of London, of which body he was elected a Fellow in May, 1883.

THE proposed public exhibition in the eastern and western cities of lepers from California, if ever seriously contemplated, has received a check by the prohibition of the spectacle, which has been promised by the various boards of health. Whatever may be the object of the exhibitor, it is clearly certain that the subjects of the loathsome disease, together with their associates, will not be allowed the freedom of the cities, much less to display themselves in public. Should the attempt to come east be persisted in, it is more than likely that this coterie of lepers will find its movements circumscribed within the narrow limits of the quarantine station or the pest-house, until a final disposition shall be made of the case. Exclusion and isolation has long been the practice with respect to this direful malady, and it is not to be expected that it will be departed from at this day. Although the modern idea is opposed to the contagiousness of leprosy or its propagation by contact, the local authorities are justified in prohibiting so repulsive a spectacle as the exhibition of this disease would present.

SPECIAL ARTICLE.

NEW TESTS FOR ACETONE—ACETONÆMIA.

THE complex of symptoms known as diabetic coma was first described by v. Dusch in 1857, shortly afterwards by Petters, Kaulich, and Cantoni—1857 to 1864—and has been more recently studied by Kussmaul, in 1874, and Frerichs, in 1883.

The symptoms are not invariably the same, but the presence of the condition is generally inferred if sleepiness and stupor, accompanied by frequent pulse, supervene upon the other symptoms of a diabetes mellitus. These phenomena are commonly gradual in their development, but there is sometimes met a more acute form, characterized by suddenness in the appearance of the above symptoms, to which are added gastric and intestinal disturbances—epigastric pain, vomiting, sometimes of blood, purging—a peculiar noisy delirium, panting respirations, and fluctuations in the rate of pulse, which continue until coma is thoroughly established, after which the pulse remains frequent and small. A peculiar fruity odor, like that of acetone, is sometimes exhaled by the breath and the urine. These symptoms occasionally disappear, but more frequently they terminate in death.

Even the earliest observers, Petters and Kaulich, regarded the condition as an intoxication due to a

substance derived from some metamorphosis of sugar, resulting in the formation of alcohol and other products of alcoholic fermentation. Having been able, with more or less certainty, to demonstrate acetone in the blood and urine, they selected this substance as the toxic agent. But even they admitted that acetone might be present in the expired air and urine in other affections, as the acute exanthemata, pneumonia, diseases of the stomach, and in diabetes without coma. Still more recently, v. Jaksch, among others, has regarded acetone as a product of normal tissue-change as well as of disease.

It will be remembered that the test heretofore in common use for acetone is *chloride of iron*, recommended by Gerhardt. This observer discovered that there was occasionally a substance in the urine of diabetics and habitual drunkards which struck a red reaction with this reagent. He inferred that this was the source of acetone, and was probably ethyl diacetate. At the same time, this substance has never been isolated, and it is considered by some to be diacetic or aceto-acetic acid. It was also soon discovered that the chloride of iron reacts with other substances more liable to be found in urine than the acetone-producing agent, so that it can no longer be considered a safe test.

Another test is Lieben's *iodoform test*. Dr. Ralfé suggests the following method of using it: About a drachm of liquor potassæ containing twenty grains of iodide of potassium is placed in a test-tube and boiled; a drachm of the suspected urine is then carefully floated on the surface. When the urine comes in contact with the hot alkaline solution, a ring of phosphates is formed, and after a few minutes, if acetone or its allies are present, the ring will become yellow and studded with yellow points of iodoform. These, in time, will sink through the ring of phosphates and be deposited at the bottom of the tube. Von Jaksch, in his extensive experiments published in *Zeitschr. für klin. Med.*, Bd. v. Heft 3, 1883, applied the test to the distillate from urines. Lieben himself furnishes a list of nineteen substances, of which two are found with certainty in urine, viz., ethyl-alcohol and lactic acid, while the others, alcohol, aldehyde, and certain fatty acids, may be present accidentally or otherwise in normal and pathological urines.

More recently PENZOLDT has made use of the *indigo reaction* suggested by Baeyer and Drewsen, and has published the results of an extensive series of experiments, as well as a *résumé* of the results of others, in the *Deutsches Archiv für klin. Med.*, Bd. xxxiv. Heft 2, Oct. 1883. The test is applied as follows: Heat a few crystals of nitrobenzaldehyde until dissolved, allow the solution to cool, when the aldehyde separates as a white cloud; then add the suspected fluid, and make it distinctly alkaline with dilute caustic soda. If acetone is present, there appears first a yellow, then a green color, followed by an indigo blue, in the course of ten minutes. If only traces of acetone are present, the yellow fluid is shaken with a few drops of chloroform, when a distinct blue coloration of the chloroform takes place.

By this method acetone can be easily detected in a dilution of 1 part to 2500, but for such delicacy the distillate must be used—about one cubic centimetre. The reaction is less distinct if the test is directly applied to urine, because of the coloring matters and other constituents, but acetone may be detected by the aid of chloroform, when in the proportion of 1 part to 1000. So far as known, pyracemic acid, aldehyde, and aceto-phenon are the only substances producing the indigo reaction, and these have not as yet been found in urine.

Still another test is Legal's with *nitroprusside of sodium and caustic potash*. These reagents strike a red color which passes over into purple on the addition of acetic acid. Kreatinin strikes a similar red color, which disappears when acetic acid is added. This test may also be applied directly to urine.

Penzoldt investigated 62 pathological urines, using for test purposes the first 2 cubic centimetres of the distillate from 300 of the acidulated urine. Of the 62 cases, 22 were diabetic. Of these, the indigo reaction was present but twice without chloroform, twice with chloroform, and in 18 cases was totally absent. Of the latter, the iodoform test responded decidedly in 7, in 6 moderately, and in 7 feebly. Two were not tried by the iodoform test. It will be seen, therefore, that this reaction was marked in several instances in which the indigo reaction did not respond.

Of the fever cases, 11 were typhoid, and in only 1 of these was the reaction decided without chloroform; in 2 with the aid of chloroform, while in 8 it failed altogether.

Out of 7 cases of pneumonia, the indigo reaction was decided in 6, and absent in 1 only.

It failed altogether in all of 6 cases of phthisis.

The reaction was present in 1 out of 3 cases of measles, and in the urine from 1 case of cerebro-spinal meningitis. Of the non-febrile cases, the reaction was found in 1 of old traumatic stenosis of the oesophagus in a child. In this case there was also a transient glycosuria, and the urine responded to the chloride of iron test as well; but both this and the indigo reaction disappeared the next day.

Thus, in the total of 62 cases, the indigo test for acetone was found but 12 times distinctly, and 6 feebly; while the iodoform test responded in almost every case, failing entirely in but 2 of the 52 in which it was tried.

It is evident from the above that the tests for acetone, or the acetone-producing substances, are far from being satisfactory. For it is impossible, in the present state of our knowledge, to say positively whether the indigo or the iodoform test is the most reliable. If we accept the indigo as correct, the number of cases even of diabetes in which acetone urea is present is very few; while if we accept the iodoform test they are quite numerous. But, when we remember that Lieben himself, the discoverer of the iodoform test, gives a list of nineteen other substances which respond to his test, of which at least five may occur in urine, while only three substances besides acetone, and of which none have as yet been found in urine, respond to the indigo test, it seems that the latter must be regarded as the more reliable.

It has already been mentioned that Petters and Kaulich supposed that acetone originated in certain fermentative processes of grape sugar, taking place in the gastro-intestinal canal, and especially the stomach, although without ever having proved it. According to Kaulich, Anthon obtained in the fermentation of grape sugar a fluid which was recognized as acetone by Prof. Lerch. Penzoldt mixed solutions of sugar with yeast and various fluids, such as decomposing urine, fermented stomach contents, intestinal fluids, decomposing cheese, rotten egg, and fever urine the distillate of which gave the indigo reaction, and allowed them to remain eight days, sometimes at the ordinary temperature, and sometimes at 100° F. The distillate of these mixtures had always more or less vinous odor, and responded distinctly to the iodoform reaction, but not to the indigo; but it cannot be claimed for these experiments that they settle the question as to which is the better test.

As soon as acetone, or the acetone-producing substance, was detected in the urine it was suspected that the symptoms in diabetic coma were caused by it, and Kussmaul early sought to settle the question by experiment. In man, doses of 6 grammes a day produced no effect. In rabbits 6 cubic centimetres, administered subcutaneously in divided doses, produced symptoms of intoxication with stupor. The same results followed inhalation in the case of rabbits, but failed in the case of dogs. Whence Kussmaul concluded that the diabetic coma was the result of an acetonæmia. Against this view there has been some reaction, Frerichs and his pupils having obtained different results in their experience, whence they concluded that there was no such thing as acetonæmia.

In the article referred to, Penzoldt has attempted to reconcile the apparent incompatibility of the view that the symptoms of diabetic coma are due to acetonæmia, with the ineffectual results of experiments and the exceedingly small amount of acetone found in the secretions. He first calls attention to the fact that the very small amount of lead found in the tissues and secretions in lead-poisoning is not considered incompatible with the view that the symptoms are caused by lead, although much larger doses are needed to produce the symptoms of lead-poisoning than the quantities thus obtained. Secondly, it makes some difference whether the poison is introduced into the system interruptedly from without, as is done in experiments, or whether it is continuously produced in the organism. Thirdly, the substance in the nascent state may act more deleteriously than that which has been some time formed. Fourthly, poison continuously absorbed sometimes produces a chronic poisoning which may quite suddenly assume an acute character, as delirium tremens in chronic alcoholism. Finally, we can only judge of the action of a substance when we compare its excretion with its formation, as a poison which is excreted as fast as it is produced cannot be expected to exhibit potent effects. Acetone is rapidly excreted by the lungs, and no experiment with it is complete unless this excretion be kept in view. Accordingly, Penzoldt took three rabbits of equal weight from the

same litter. To one (A) was administered, subcutaneously, one gramme of pure acetone, and the animal placed under a small bell-glass. A second (B) was similarly placed without acetone. A third (C) received also a gramme of acetone subcutaneously, and was set free. In ten minutes A was restless, dizzy, dyspnoeic; B normal; C stupid, and did not retract its hind legs when they were drawn out. In fifteen minutes A lay on its side, B showed scarcely any dyspnoea, C was dizzy and remained a short time on its side when put there. In three-quarters of an hour A was stupid and dyspnoeic, with eyes half closed; B began to breathe somewhat more deeply; C was still staggering, but walking. Still later the condition of A became more intensified, while C was again normal. After two and a half hours A lay at the point of death, B was strongly dyspnoeic, but still strong and on its legs. The animals were then removed from the bells and revived.

These experiments were further so modified as to permit the acetone to be inhaled, with similar results. Whence Penzoldt inferred that acetone causes in rabbits continued somnolence and stupor if its excretion by the lungs is interfered with, and that while the doses required to produce these effects cannot be considered small, they cannot, on the other hand, be regarded as excessively large. Whence we have only to suppose the temporary or permanent interference with the excretion of acetone by the lungs in diabetes to be able to account in a perfectly satisfactory manner for the phenomena of diabetic coma. Such a condition may be found in the lung complications which so constantly attend diabetes. A parallel is seen in the interference by the altered state of the uriniferous tubules of the kidney with the elimination of urea, and the consequent uræmic symptoms. At the same time, Penzoldt well says that it would be as much a mistake to ascribe all the symptoms of diabetic coma to the retention of acetone as it would be to refer uræmia in Bright's disease to the retention of urea alone. As in the latter case there may be allied substances, so in diabetes there may be substances allied to acetone which unite with it in producing the peculiar symptoms of diabetic coma.

One more point in connection with this very interesting and not unimportant subject, and bearing also on Penzoldt's experiments. It will be noted that acetone was revealed by the indigo test in six out of seven cases of pneumonia. Now in pneumonia, in which the air-vesicles are completely filled over a large portion of the lung, we can understand that the elimination of acetone is largely interfered with, much more so than in cases of phthisis. Hence, supposing it to be a normal product of tissue-change, we should expect it to accumulate in the blood and to appear in the urine; while in cases of diabetes mellitus, in which we may reasonably suppose it to be found in abnormal amount, we should expect it to be found in greater quantity in the urine in those cases accompanied by a lung complication. Attention should be directed to these points by clinicians.

REVIEWS.

ELEMENTS OF PHARMACY, MATERIA MEDICA, AND THERAPEUTICS. By WILLIAM WHITLA, M.D. (G.U.I.), Physician to the Belfast Royal Hospital. With lithographs and woodcuts. Second edition. 12mo., pp. 602. London: Henry Renshaw, 1884.

THIS valuable little manual is intended to give to the student of medicine such information in a concise form as he generally has to sift out of two or three larger handbooks; and certainly the author has generously carried out his intention. The book contains all in its own branches that a busy practitioner could wish to be able to find at a moment's notice; pharmacy, materia medica, and therapeutics each receiving a proper amount of consideration. The last two hundred pages of the book are given to the discussion and description of non-official remedies, the administration of medicines (including a valuable chapter on prescription-writing), and pharmacopœial reactions and tests, with tables of weights and measures, an excellent index, and an index of poisons and their antidotes.

The volume is well worth a place upon the table of every practitioner of medicine, as a means of rapid reference.

THE PHYSICIAN'S COMBINED DAY-BOOK AND LEDGER. By H. T. HANKS, M.D., New York. For sale by J. H. Vail & Co., 21 Astor Place.

TO no business man is a ready and at the same time infallible system of bookkeeping more important than to the physician. Compelled for the most part to keep his own accounts, and to make out his own bills, his time is generally so much occupied that it is impossible and unprofitable for him to follow an elaborate system. At the same time, it is well known that physicians lose much money because of their constant failure to note visits and other services.

The day-book and ledger of Dr. Hanks seems calculated to meet all the requirements of our profession. The bookkeeping is compact, the account is easily followed, there is no transfer or extra posting, and the book is adapted for city or country practice, and to many or few patients. A little careful study of the method shows it to be simple and easily understood, and we believe physicians will find it useful.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, May 5, 1884.

WILLIAM HUNT, M.D., IN THE CHAIR.

DR. FERDINAND H. GROSS exhibited a

TUMOR OF THE MALE MAMMARY GLAND,

which he had removed from a male patient at the German Hospital. The man was fifty-eight years of age, a German, who, in his own country, had followed the occupation of a tailor, but in this country had become a confectioner. He presented a pale, cachectic appear-

ance, but was not markedly emaciated. From his own account, he descends from a stock remarkable for longevity. The patient knows of no cancerous disease or other tumors to have occurred in any of the members of his family. There appears, therefore, to be no hereditary taint associated with his disease. About two and a half years ago he noticed, for the first time, several small lumps or swellings beneath the skin on different parts of the right side of the chest. They were scattered over an area beyond the region of the mammary gland, would remain for a time, and then disappear. About four months ago he was taken ill, and confined to his bed for several weeks. His physician told him that his liver and kidneys were affected. The skin was jaundiced, and his urine was very high colored. As he was recovering from these troubles, between two and three months ago, he noticed a hardened, round tumor, about an inch in diameter, in the region of the right nipple. About a week later it began to ulcerate at a point resembling a small pimple. Previously he had not noticed an involvement of the skin. The ulcer has extended to the size of a dime. The growth was not continuously painful, but occasionally darting pains were experienced in this region, and these were at times quite severe. The lymphatic glands in the neighborhood, as in the axilla, are not enlarged or painful.

DR. GROSS believed the neoplasm to be scirrhus in character; but, as it had been removed only a few hours before the meeting, a minute examination had not been possible.

The case was specially interesting as occurring in the male, and a committee, consisting of Drs. F. H. Gross, J. M. Barton, and S. W. Gross, was appointed to make a microscopic examination, and report at a future meeting.

DR. NANCREDE asked if any of the Fellows had had any experience with the comparatively new method called deep canalization, whereby immediate union is obtained without the use of drainage-tubes, and not more than one dressing. There are two methods of performing this. He had tried one, and it was very satisfactory, except that the relaxation-suture gave way, with consequent strangulation of the middle part of the wound.

The method of performing this operation is to make a number of oval holes in the skin (about four), two-thirds of a centimetre in their long diameter, at the lower portion of the posterior axillary fold, then introduce a relaxation-suture to take off the strain. The edges were coapted by a continuous catgut suture. In his case, this suture, which was of catgut, gave way. There was a normal temperature in this case until the eighth day, when a little sloughing occurred. He believes that if he had used a metal suture only one dressing would have been required. The wound was dressed with the corrosive chloride solution. Gerster reports three cases, one of which was well on the fourteenth day, another about the thirteenth or fourteenth, and a third on the twenty-first day. These cases required only one dressing beside the primary dressing. Where the skin cannot be brought together, it has been suggested to stitch the skin to the anterior and posterior axillary folds, so as to leave an open surface for drainage.

DR. BARTON said that the method suggested by Dr. Allis is valuable in cases like this. He takes a broad

strip of plaster and runs it to the very edge of the incision, and the same on the opposite side. He then carries the stitches through both the skin and the plaster. This plan is valuable where considerable strain has to be put on the sutures.

DR. PACKARD said that it might seem superfluous to mention any other method, but the one to which he desired to call attention is entirely analogous to the old dry suture. There is a form of plaster now made which enables us to use the dry suture to greater advantage than formerly. This is the porous plaster. It is not irritating to sound skin. He had used it to great advantage by applying a piece of plaster to each side of the wound, and instead of passing the sutures through the skin and the plaster, he simply laces them through the holes of the plaster. This is sufficient to bring the edges of the skin together, and prevents the irritation of the deeper parts which follows the introduction of sutures. If desired, the lacing can be readily undone and the wound dressed. The dressing may be placed below the sutures, if it is wished, or it may be placed above. This plan has been very efficient in his hands.

There is another point to which it is, perhaps, well to refer, and that is in regard to the removal of plasters, and especially of large ones. It is not necessary to remove the whole strip, but simply the portion on each side of the wound should be cut away and the plaster spliced with a new piece.

In regard to applying the porous plaster to irregular parts, the plaster may be cut in strips and the ends of these strips united according to the nature of the part. There are many cases in which it is desirable to avoid sutures, and in such cases this plan may often be adopted.

The skin, he thinks, stretches to a greater extent than is usually supposed. He mentioned a case at the meeting of the American Surgical Association, at Washington, that of a man who was caught in machinery and had a comminuted fracture of the forearm, and a compound comminuted fracture of the arm for about three-fourths of its length. The skin was torn to such an extent that there was no possibility of covering the stump. The skin was stripped entirely from the arm, leaving the muscles bare. This man was brought into the hospital in the evening. He saw him the following day; he was still in good condition. He decided that the proper thing to do was to relieve him of the arm. He made an ordinary double-flap shoulder-joint amputation, through the muscles alone. He brought the skin together as near as possible from the front and back with two long shawl-pins, and over these he made a figure-of-8, with a piece of narrow bandage, as he feared the tension of a ligature. The wound was dressed with carbolic oil, in the ordinary way. The man made an uninterrupted recovery. At one time he was greatly prostrated with diarrhoea, and lost flesh, but he recovered from this. He saw him two weeks ago, and the only point that is liable to give trouble is where the cicatrix passes over the point of the acromion and clavicle. Here there seems to be some tension, but it does not give the patient any inconvenience.

DR. PANCOAST, as a dressing for harelip, uses a strip of adhesive plaster long enough to go around the skull and to roll up at the ends into little pads. By this means the projection of the nose is surmounted. This

forms a useful way of supporting the cheeks. He also uses, in addition, to approximate the margins of the skin, fine black silk sutures.

DR. NANCREDE said that in removing the mammary gland he uses a free incision, and one that makes but little angle. He then introduces sutures, five inches from the edge of the wound, using the buttons introduced by Cheyne. With these buttons the greater part of a large incision can be coaptated, and union by what is called first intention may be secured. He has also used the button-suture as a relaxation-suture. The method of Dr. Packard is exceedingly ingenious, and he will try the long strips when he has an opportunity. The large pieces would, he thinks, interfere with the stretching of the skin.

DR. J. EWING MEARS said that the essential feature of the modern treatment of wounds is to secure, if possible, such thorough coaptation, approximation, and relaxation of the edges of a wound that primary union may take place. For this purpose three forms of suture are used: 1. The suture of coaptation, which is to bring the edges together. 2. The suture of approximation, which is passed a little further from the edges than the first suture. 3. The suture of relaxation, which is introduced at a still further distance from the edges of the wound. In order properly to apply this suture, the buttons referred to by Dr. Nancrede should be employed. With these three forms of suture there is no difficulty, in most cases, in bringing the parts together, and the edges can be approximated without the danger of causing tension, which develops irritation. That is an important feature of the modern method of wound treatment. He thought that any one who has studied the antiseptic method of treating wounds will find that, as a rule, plasters are dispensed with. Dependence is placed on these sutures. He thought, therefore, that if we adopted the modern antiseptic methods of treating wounds, we should give up plasters largely. As to Dr. Packard's suggestion in regard to the removal simply of that portion of plaster which covers the wound, this plan was described by the late Mr. Callender at one of the New York college clinics, during his visit to this country.

DR. PACKARD said that he certainly did not intend to claim any originality. He did not know whether it was described by Mr. Callender or not. It seemed a suggestion which would naturally occur to any one who pays attention to diminishing the suffering of the patient.

It seemed to him that we could scarcely dispense with plasters. He conceded that great improvements have been made in the sutures. One thing that we do now is to use deep sutures and use relaxation-sutures. He thought the button-suture a great improvement. He was a little surprised to hear that the great point in the modern treatment of wounds is to secure approximation. He should say that the other tendency is the one which is now predominant: that large incisions may be made and the wound be allowed to heal by granulation. Tumors are now removed, which, twenty years ago, the best surgeons would have left alone, because they had not learned that wounds will granulate from the bottom.

Four years ago he removed a tumor from a patient; she made a good recovery, but this winter there was a return of the disease beneath the cicatrix. There was a large mass near the middle line, the removal of which produced a wound which it was impossible to close. It

was dressed with carbolized oil. After a time it was sprinkled with borax and then astringent applications were used. The wound is now no larger than a ten-cent piece. We are coming to the idea that we can allow wounds to close up by granulation under antiseptic and astringent dressings.

CORRESPONDENCE.

CIDER VINEGAR IN THE TREATMENT OF DIARRHŒA AND DYSENTERIC SYMPTOMS.

To the Editor of THE MEDICAL NEWS.

SIR: The apprehension of the danger threatened by the Asiatic cholera, being already accompanied by an amount of diarrhœa and dysentery in most communities, it seems incumbent again to call attention to the internal administration of cider-vinegar as being followed by such remarkably happy effects upon such maladies.¹

It has recently been said that the cholera microbes are destroyed by acids, and that alkalies favor their generation. Pure lemon-juice is reported to have been recommended abroad for diarrhœa, and the general opinion that the fermented acids from fruit juices, are dangerous in such diseases, seems about to be proved erroneous, or at least found liable to very pronounced exceptions.

In these affections when the contraction of the sphincter ani muscles demands an effort on the part of the will, merely bringing vinegar in contact with the tongue inaugurates a reflex action upon the nervous system and probably the lower portion of the spinal cord, that almost invariably relieves the patient. The cramps, tenesmus, and chills that are so distressing, are quickly combated by a draught of the remedy and succeeded by a glow of the most natural and comforting character.

Vinegar swallowed in doses of a teaspoonful by young children, and a wineglassful by adults, may be repeated several times if the pain returns or the evacuations of the bowels recur, until generally after the third, but most frequently after the first administration, there seems to result a complete cure and this too without any necessity in ordinary cases for positive restrictions of motion or diet.

This has been so safe, rapid and complete a cure in both recent and chronic cases, that to enumerate them here, would seem less likely to convince doubters of its efficacy, than to cause them to suspect it as savoring of the sentiments of reports of the advertised nostrums.

A food of the class of condiments, so universally used, being mentioned by the early biblical writers and known as a part of the diet of millions of soldiers from the time of the Romans to the present, would seem to encourage the conscientious study of articles of daily and familiar use, for the discovery of new capabilities. Doubtless there are many simple and efficient remedies at our command, that have been overlooked through their simplicity and innocuousness.

The aphorism of Sydenham, that "the nearer a medicine approaches a food the more efficient it

¹ See American edition of Coleman's Dental Surgery and Pathology, p. 32.

becomes"—excites the hope that it is pardonable to attempt the persuasion of others to test this plain acquaintance and thus see if it is not worthy of greater respect in the pharmacopœia.

Earnestly desiring that the mention of the experience of the writer may aid in causing others to essay it and that thus the benefits of this remedy may be fully reaped by all through its most wide publication in your journal,

I am very sincerely yours,

THOMAS C. STELLWAGEN, M.D.

PHILADELPHIA, 1627 CHESTNUT ST.,
August 1, 1884.

P. S.—Since the above was in print, I have received, through the kindness of Prof. Alfred Stillé, M.D., an extract from the *Journ. de Méd. et de Chirurg. prat.*, viii. 432, which speaks of the employment of very sour (très vinaigrée) lemonade, or pure vinegar, in sixteen cases of what are called epidemic cholera, with twelve recoveries.

This article further states, "All the symptoms of Asiatic cholera were found united in these patients with the exception of the cyanosis, which was wanting in the most of them." Can the prompt use of the vinegar have prevented this almost fatal although crucial symptom?

NEWS ITEMS.

CHOLERA PRECAUTIONS IN THE UNITED STATES.—The Massachusetts and Connecticut State Boards of Health last week issued circulars to the public containing suggestions relative to epidemic cholera, and urging the importance of public and private sanitation and disinfection.

The Government is establishing a quarantine station at or near the "Delaware Breakwater" for the purpose of preventing the introduction of infectious diseases by foreign vessels which anchor at the Breakwater before proceeding up the Delaware River. This action is taken at the request of the Wilmington Board of Health.

THE PARIS ACADEMY OF MEDICINE ON CHOLERA QUARANTINE.—At its meeting on July 15, the Académie de Médecine of Paris formally adopted the following propositions:

1. Land quarantine, whatever be the form under which it is established, is impracticable in France.
2. The disinfection procedures carried out on travellers and their baggage in the railway stations are inefficient and illusory.
3. Medical posts should be established in the large railway stations, in order to give assistance to the sick, and to isolate them from the other travellers.
4. The efficacious measures of protection are those which every person should take for himself and his house. It is the duty of municipalities to see that the rules relating to the isolation of the sick, the disinfection of linen, clothing, rooms, etc., are rigorously carried out; and that the precautions of private and general hygiene are strictly followed.—*Gaz. Méd. de Paris*, July 26, 1884.

PREPARING FOR CHOLERA IN PARIS.—A correspondent of *The Lancet* writes from Paris, under date of July 22d, that the cholera more than ever engrosses public thought, and in medical circles is the principal, if not the only, subject of discussion. Nor is this solely

a matter of conversation. Two notable measures have been adopted. Dr. Dujardin-Beaumetz, Member of the Council of Hygiene and Salubrity for the Department of the Seine, is organizing throughout Paris a sanitary service. Medical officers of health are now being appointed for every district. Orders are given that any illness of a choleraic nature must be reported at once to the nearest police station. The prefect of police is then communicated with by telegraph, and the medical officer is ordered to superintend personally the disinfection of the house where the case is reported. But the question arises as to what is meant by the term disinfection, and who is to do the work which these newly created medical officers are called upon to superintend. So far either policemen or firemen have been employed; and, on the whole, a distinct preference is shown for the latter. They are brave, active, and accustomed to constant alarms; on the other hand, they are young men, very susceptible to contract diseases, and may possibly infect the barracks in which they live. The term disinfection is also employed in a very vague manner. It generally means a good scouring, and but for the plentiful use of carbolic acid or chloride of lime would be little better than an English "spring cleaning."

While, however, Dr. Dujardin-Beaumetz is organizing the machinery for the disinfection of houses, M. Pasteur is conducting a series of experiments for the purpose of ascertaining what may be considered effective disinfection. In conjunction with several other medical men, some civil engineers, and the prefect of police, M. Pasteur has been every morning to the Hôpital Cochin, where experiments were organized in the following manner. M. Pasteur selected from his laboratory the microbes of chicken cholera, of anthrax, lymph of smallpox (both moist and dry), and other similar subjects. These specimens were divided into three equal parts, and placed in three different small rooms at the hospital. In one room common sulphur was burnt; in the second liquid sulphurous acid was injected through the door by M. Pictet; and nothing whatever was done to the third room. After twenty-four hours the microbes were examined, and calves were vaccinated with the smallpox lymph. The result so far goes to show that the sulphurous acid, whether derived from the fumes of burning sulphur or from M. Pictet's siphon bottles containing the liquid form, did not disinfect at all.

M. Pasteur showed me some cultures, notably those of splenic fever, which had developed themselves with great activity in spite of twenty-four hours' sojourn in the midst of sulphurous acid gas. At the same time, I must state that the experiments were in no wise conclusive. The amount of sulphur employed was small—750 grammes to 80 cubic metres,—and now the experiments are being repeated with a far stronger proportion of sulphurous acid; and if the liquid form is employed, there will be no difficulty in attaining the required strength. But this is expensive. At present five francs a litre is the price demanded, though probably this will be reduced to two or three francs. Yet even at this price the disinfection of a room will cost from ten to twenty shillings, according to its size.

The Hôpital Bichat and the Hôpital Broussais will be devoted especially to the treatment of cholera cases should the epidemic break out in Paris.

CHOLERA PRECAUTIONS IN GERMANY.—The following regulations have been promulgated by the Berlin Board of Health:

Especial attention should be paid to the general health of the people, in order to prevent a disposition to cholera from disorders of the digestive organs. Care should be taken that persons thus affected should have the necessary medical attention as soon as possible.

In places affected by cholera, the following rules are to be observed: The first cholera patients are to be isolated in their homes, or else carried to a cholera hospital. The latter should be done when the surroundings of the patient are unfavorable for treatment at home. Public carriages should not be used to transport cholera patients. If one has been so used, it must be disinfected before being again used for any purpose. The bodies of persons dead of cholera must be removed from the house as soon as possible; and a special place for their reception should be provided for these corpses. Towns which have no special place for their burial, should provide one.

Rules for Disinfection.—1. The discharges from cholera patients must be placed, as soon as possible, in vessels containing 1 part of pure carbolic acid to 18 parts of water. The quantity of the disinfecting material should be at least one-fifth of the material to be disinfected.

2. Body- and bed-linen soiled with cholera discharges should be immediately placed in this solution, and left therein for forty-eight hours, and then washed in water.

3. Clothing, beds, and other articles which cannot be treated in this manner, should be disinfected by steam.

4. Furniture and floors soiled by the discharges should be cleansed with dry rags, which must then be burned or placed in the carbolic solution.

5. All persons who come in contact with cholera patients or their effects, or are soiled by their discharges, should thoroughly disinfect and wash their hands with the carbolic solution before going into the presence of other persons or eating anything.

6. In carrying out disinfection by means of steam, only such apparatus is necessary as will carry a spray of steam through the room to be disinfected and raise the temperature in the room to at least 212° Fahr. This can be regulated by a thermometer. The time necessary for disinfecting different things may be put as: For clothing, not less than one hour; and for articles difficult to penetrate, not less than two hours. Of course, the time is not reckoned until the temperature reaches 212°. The steam is better developed in a steam-kettle, and carried into the room to be disinfected through a pipe. Instead of a steam-kettle, a very large boiler may be used; and the articles may be placed in it and boiled.

Where such measures cannot be employed, as with bolsters, feather-beds, mattresses, etc., a continuous airing for six days in a warm, dry place, protected from the rain, may be employed. Sleeping-rooms in which cholera patients have lain, are to be cleaned, and aired for six days, and then thoroughly dried with heat.

7. Articles of little value should be burned when soiled, rather than disinfected.—*Berlin. klin. Wochensh.*, July 21, 1884.

CHOLERA PRECAUTIONS ON THE ITALIAN FRONTIER.—Six thousand persons are reported to be detained in

the various lazarettos on the Italian frontier and along the coast.

PRECAUTIONS ELSEWHERE.—The ports of Brazil have been closed to vessels from Marseilles, Toulon, Spezzia, and all ports at which cholera prevails. The authorities at Madeira have refused to allow passengers and mail on a steamer which has arrived there from England to land.

AN ENGLISH CHOLERA COMMISSION.—The English Government has directed Dr. KLEIN and Dr. HEN-EAGE GIBBES to proceed forthwith to India to pursue a scientific inquiry into the nature of cholera. It is understood that these gentlemen will act in conjunction with the Commission nominated a few weeks ago by the Indian Government for the same object.—*Lancet*, July 26, 1884.

YELLOW FEVER PRECAUTIONS.—Inspectors have been appointed to accompany railroad trains leaving Guaymas, Mexico, for the United States, and prevent the passage of persons suffering with yellow fever from entering at El Paso, or Nogales. Sanitary Inspector Ross reports several cases having been put off at Hermosillo, and that there are six cases in the railroad section-house there, employés of the railroad.

The United States Consul at Mazatlan, Mexico, reports the existence of yellow fever at that place, and states that clean bills of health however are furnished vessels by the Board of Health of Mazatlan.

THE NATIONAL BOARD OF HEALTH.—The National Board of Health held its annual meeting on July 30th, and elected officers for the ensuing year as follows: President, Dr. James L. Cabell, of Virginia; Vice-President, Dr. Stephen Smith, of New York; Secretary, George E. Waring, Jr., of Rhode Island; additional members of the Executive Committee: Thomas Simons, Department of Justice; Dr. Charles Smart, U. S. A., and Dr. T. S. Verdi, of Washington. The following resolution was adopted:

Resolved, That in view of the possible invasion of the country by cholera, and of the existence of epidemics of other diseases, and in view of the duty imposed upon the Board by law "to obtain information on all matters affecting the public health," the Executive Committee is directed to put on duty such members of the Board as in its judgment may be necessary.

At a meeting of the Executive Committee the following was passed:

Resolved, That the members of the Board be placed on duty for the investigation of all matters which, in their judgment, have direct bearing on the question of cholera as a present menace to the public health, and epidemic of other diseases existing in the country. Congress having failed to make appropriation for the purpose, it is understood that such duty is to be performed without compensation.

THE COPENHAGEN CONGRESS.—The *British Medical Journal* announces that it is officially informed that the International Medical Congress at Copenhagen will be held as originally announced, and will not be postponed on account of the appearance of cholera, as has been suggested.